Science Wonder Stories

November

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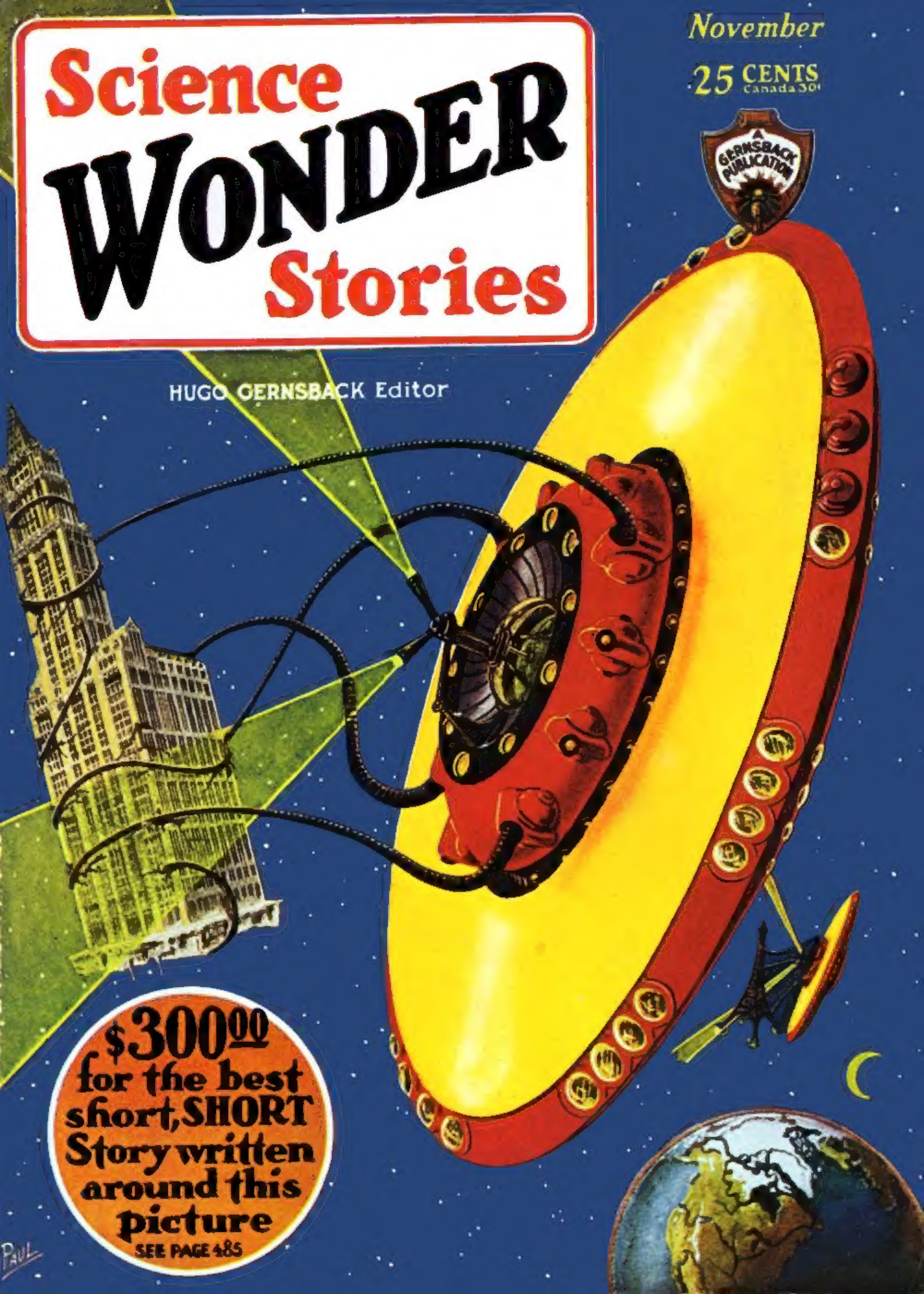
HUGO GERNSBACK Editor



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"What? Learn Music by Mail?" *they laughed*

"Yes," I cried, *"and I'll bet money I can do it!"*

IT all started one day after lunch. The office crowd was in the recreation-room, smoking and talking, while I thumbed through a magazine.

"Why so quiet, Joe?" some one called to me.

"Just reading an ad," I replied, "all about a new way to learn music by mail. Says here any one can learn to play in a few months at home, without a teacher. Sounds easy, the way they tell about it."

"Ha, ha," laughed Fred Lawrence, "do you suppose they would say it was *hard?*"

"Perhaps not," I came back, a bit peeved, "but it sounds so reasonable I thought I'd write them for their booklet."

Well, maybe I didn't get a razzing then! Finally Fred Lawrence sneered: "Why it's absurd. The poor fellow *really* believes he can learn music by mail!"

To this day I don't know what made me come back at him. Perhaps it was because I *really was* ambitious to learn to play the piano. Anyhow, before I knew it I'd cried, "Yes, and I'll bet money I can do it." But the crowd only laughed harder than ever.

Suppose I Was Wrong—

As I walked upstairs to my desk I began to regret my haste. Suppose that music course wasn't what the ad said. Suppose it was too difficult for me. And how did I know I had even the least bit of talent to help me out. If I fell down, the boys in the office would have the laugh on me for life. But just as I was beginning to weaken, my lifelong ambition to play and my real love of music came to the rescue. And I decided to go through with the whole thing.

During the few months that followed, Fred Lawrence never missed a chance to give me a sly dig about my bet. And the boys always got a good laugh, too. But I never said a word. I was waiting patiently for a chance to get the *last* laugh *myself*.

My Chance Arrives

Things began coming my way during the office outing at Pine Grove. After lunch it rained, and we all sat around inside looking at each other. Suddenly some one spied a piano in the corner. "Who can play?" every one began asking. Naturally, Fred Lawrence saw a fine chance to have some fun at my expense, and he got right up.

"Ladies and gentlemen," he began, "our friend Joe, the music master, has consented to give us a recital."

That gave the boys a good laugh. And some of them got on either side of me and with mock dignity started to escort me to the piano. I could hear a girl say, "Oh, let the poor fellow alone; can't you see he's mortified to death?"

The Last Laugh

I smiled to myself. This was certainly a wonderful setting for my little surprise party. Assuming a scared look, I stumbled over to the piano while the crowd tittered.

"Play 'The Varsity Drag'," shouted Fred, thinking to embarrass me further.

I began fingering the keys and then . . . with a wonderful feeling of cool confidence . . . I broke right into the very selection that Fred asked for. There was a sudden hush in the room as I made that old piano talk. But in a few minutes I heard a fellow jump to his feet and shout, "Believe me, the boy is *there!* Let's dance!"

Table and chairs were pushed aside, and soon the whole crowd was shuffling around having a whale of a time. Nobody would hear of my stopping, least of all the four fellows who were singing in harmony right at my elbow. So I played one peppy selection after another until I finished with "Crazy Rhythm" and the crowd stopped dancing and singing to applaud me. As I turned around to thank them, there was Fred holding a ten-spot right under my nose.

"Folks," he said, addressing the crowd again, "I want to apologize publicly to Joe. I bet him he couldn't learn to play by mail, and believe me, he sure deserves to win the money!"

"Learn to play *by mail!*" exclaimed a dozen people. "That sounds impossible! Tell us how you did it!"

I was only too glad to tell them how I'd always wanted to play but couldn't afford a teacher, and couldn't think of spending years in practice. I described how I had read the U. S. School of Music ad, and how Fred bet me I couldn't learn to play by mail.

"Folks," I continued, "it was the biggest surprise of my life when I got the first lesson. It was fun right from the start, everything as simple as A-B-C. There were no scales or tiresome exercises. And all it required was part of my spare time. In a short time I was playing jazz, classical pieces, and in fact, anything I wanted. Believe me, that certainly was a profitable bet I made with Fred."

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Instr.? .....

Name .....

Address .....

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Vol. 1, No. 6

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NOVEMBER, 1929

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ON THE COVER

this month is pictured the subject of our $300.00 short, SHORT story prize contest. Here we see some monstrous machine which has, evidently, torn the Woolworth Building and the Eiffel Tower from their foundations and transported them out into space; how the machine did this is not known, whether by gravity nullification or by some unknown rays. When consulted about the cover, and asked what *he* thought the picture describes, Mr. Gernsback assured us that he did not have the remotest idea as to what it is all about.

NEXT MONTH

THE CONQUERORS, by David H. Keller, M. D. If you thought "The Human Termites" a great science-fiction story, you will be doubly pleased with the latest masterpiece of Dr. Keller. In the newest story, Dr. Keller has thrown another mental bombshell by picturing a race fifty thousand years hence. And, in doing so, he has given us a marvelous insight into the future that you will not soon forget. The story will run serially during the next few issues.

THE LOST MARTIAN, by Henry Harbers. Here is a strange and unusual interplanetarian story, showing what happens when a Martian explorer becomes stranded in our world. The narrative contains a goodly amount of excellent science and gives you a wonderful insight into the higher civilization of the Martians. Do not miss this story!

THE RADIATION OF THE CHINESE VEGETABLE, by C. S. Gleason. Mr. Gleason is well known to thousands of radio enthusiasts as a writer on radio subjects. A radio man of no mean skill, he has the ability to take hold of a simple quality of radio and give it an original twist. And, what is more, his inventions are such that they can be almost translated immediately into realities; because each and every one actually can be made to work. Anyone can prove them by trying them. Incidentally, the humor in his stories is always refreshing.

THE SUPER VELOCITOR, by S. C. Carpenter. Here is a story that will be long remembered in the annals of science fiction. It is one of the most surprising stories that we have read in years, a most curious development that no one would guess. We are not going to give the plot away by telling you just what it is all about. It suffices to say that it is one of the most intriguing stories we have ever read, and it will cause endless as well as heated discussions from our readers.

AND OTHERS.

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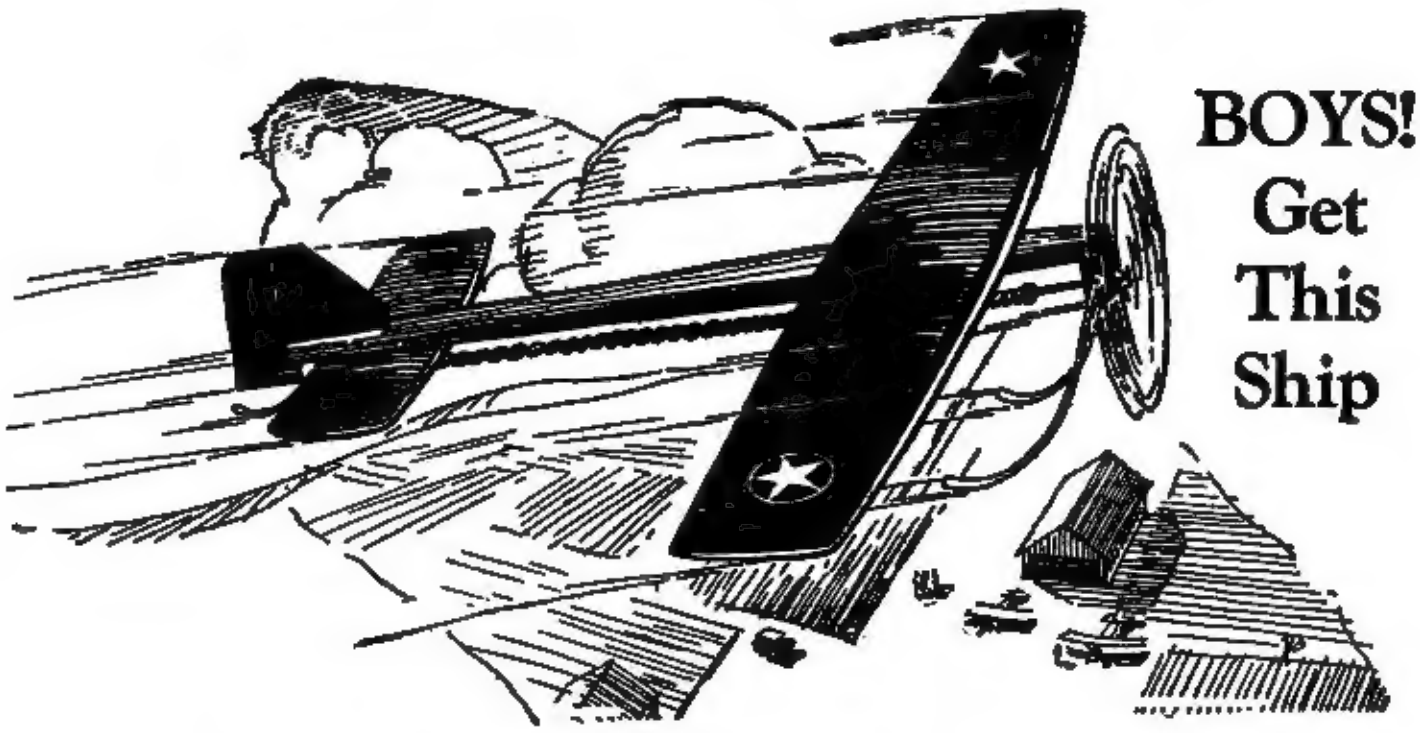

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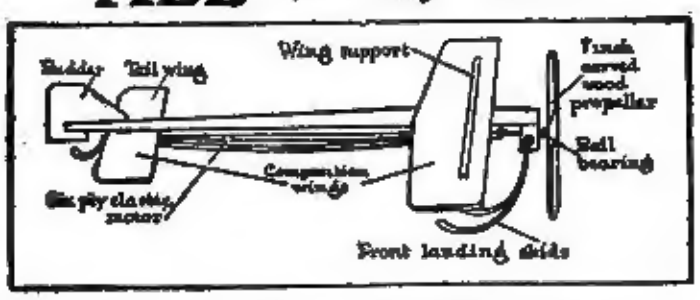

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Service Station Owner — up to $200 a Week
Radio Expert, $60 a Week and up
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Make up your mind today to get into one of these real-pay electrical jobs. If you act now—I'll pay your railroad fare to Chicago and give you these courses free! AVIATION ELECTRICITY, RADIO and AUTOMOTIVE ELECTRICITY! And besides that, I help you to a part-time job while learning! FREE employment service for life after graduation, too. We place dozens of men in wonderful jobs every week.

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VOLUME 1
No. 6

Science WONDER Stories

NOVEMBER
1929

Editorial, Advertising and General Offices, 96-98 Park Place, New York, N. Y.

• • • • • Prophetic Fiction is the Mother of Scientific Fact • • • • •

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These nationally-known educators pass upon the scientific principles of all stories.

$300.00 PRIZE STORY CONTEST

By HUGO GERNSBACK

EVER since I started SCIENCE WONDER STORIES, readers from all parts of the world have beseeched me to run a prize-story contest. I have given the matter considerable thought, and, as a result, I believe that I have inaugurated something new in science fiction.

The trend of the times seems to be towards shorter and shorter stories. A few years ago, a short story was anywhere from ten thousand to twenty thousand words. Of late the short, *SHORT* story has gained ascendency in a number of magazines, and has opened up a new field for embryo authors. A short, *SHORT* story is one that runs to not more than fifteen hundred words; yet the author still finds it possible to tell a coherent tale, into which he packs just as much literature and entertainment as does his more ambitious brother who writes stories from ten thousand words up.

To the best of my knowledge no one has written a short, SHORT science-fiction story up to this time; but I personally believe that there are tremendous possibilities in this particular class of literature. There is a great deal of wasted talent in possible authors of this work, simply because they shirk the idea of writing a lengthy story. But a short opus of fifteen hundred words, or less—which any one can write in one or two hours—is a different problem, and one that will no doubt attract many science lovers who otherwise would never write a story. Hence, the present contest.

Having no short, *SHORT* science-fiction stories, to use as a model, I tried my hand at one. The result is found in this issue.

The present contest is centered around this month's cover illustration. When I originated the idea for the cover, I told Artist Paul what it was all about; and he has done what, in my humble opinion, is a little masterpiece.

I can give you no clues as to what the picture is all about, and you will have to use your own ingenuity in writing a story around it. The picture, I believe, speaks for itself.

You are asked, then, to write a story around the cover picture; and the more interesting, the more exciting, and *the more scientifically probable* you can make it, the better. Remember, *anyone* can participate in this contest.

Study the details carefully, and be sure that you do not miss ANY of the details of the picture; because they are all important.

$300.00 IN PRIZES

These cash prizes will be awarded and will be paid on publication of the prize-winning stories in SCIENCE WONDER STORIES.

First Prize	$150.00 in gold
Second Prize	75.00 in gold
Third Prize	50.00 in gold
Fourth Prize	25.00 in gold

All prize-winning stories will be published in subsequent issues of SCIENCE WONDER STORIES in the order of their rating, as determined by the judges.

Naturally, in a contest of this kind, it is impossible to have a great many prizes. For this reason, we have made only four, to be awarded for the four best stories submitted. Each of these prize winning stories, we know, will be a most interesting treat for our readers; for the simple reason that different authors, naturally, will have entirely different plots and different ideas as to what the cover picture really represents.

Before you start writing your story, *be sure to read the following rules:*

(1) A short, *SHORT* science-fiction story is to be written around the cover picture of this November issue of SCIENCE WONDER STORIES.

(2) The story *must* be of the science-fiction type; and should be plausible in the light of our present knowledge of science.

(3) The story must be between 1,400 and 1,500 words.

(4) All stories must be submitted typewritten double-spaced, or legibly penned; pencilled matter cannot be considered. The stories submitted must be received flat—not rolled.

(5) No manuscripts can be returned unless return postage is enclosed.

(6) Because the expected flood of manuscripts, the editors cannot enter into correspondence on stories submitted.

(7) Four cash prizes will be awarded: First prize, $150.00; second prize, $75.00; third prize, $50.00; fourth prize, $25.00.

(8) In awarding the prizes, SCIENCE WONDER STORIES acquires *full rights of all kinds;* such as translation into foreign languages, syndicate rights, motion-picture rights, etc. The Board of Editors will be sole judges.

(9) Stories in addition to the prize-winning ones may be chosen by the editors at their option, for publication at the usual space rates of this magazine.

(10) Contest closes on December 5, 1929, at noon; at which time all manuscripts must have been received at this office.

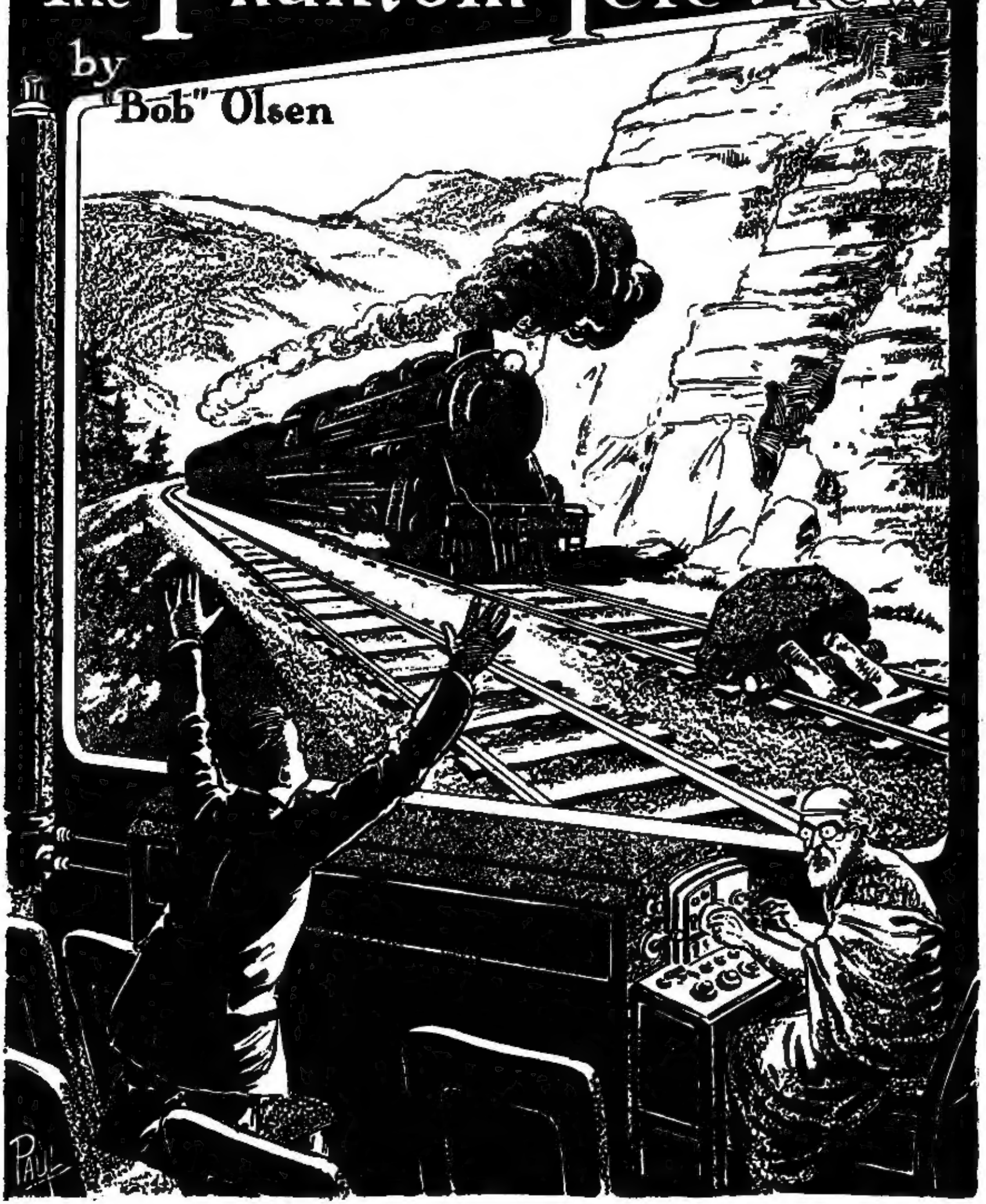
(11) Any one except employees of the Stellar Publishing Corporation and their families may join this prize contest. It is not necessary to be a subscriber to the magazine.

IMPORTANT—For the guidance of new authors, we have prepared a pamphlet entitled *"Suggestions to Authors."* This will be sent to the applicant upon receipt of 5c to cover postage.

Address all manuscripts to Editor, *Prize Cover Contest,* SCIENCE WONDER STORIES, 96-98 Park Place, New York, N. Y.

The Phantom Teleview

by "Bob" Olsen



Concealed behind a curve the obstruction was not observed as the train hurtled on. I braced myself for a terrific jar for the train seemed but a few feet away from where I was standing. Then the gigantic steed of metal crashed into the obstacle.

Illustrations by Paul.

THE PHANTOM TELEVIEW

By the Author of "Flight in 1999"

State Penitentiary,
San Quentin, California.

Mr. Hugo Gernsback, Editor Science Wonder Stories,
New York City, N. Y.

Dear Mr. Gernsback:—

This letter is written as a last desperate effort to prove that I am innocent of a terrible crime for which I have been condemned to die on the gallows.

Perhaps you wonder why I am addressing this singular communication to you. In one way you are a total stranger to me, but in another sense you are one of the best friends I have ever known. I am a great admirer of science fiction. Through reading the stories which you have either written yourself, or have edited, I feel that I have come very close to you. That's why I now take the liberty of asking you to render me a service that may bring me freedom instead of a shameful death.

I have become convinced that *there is only one man* on earth who can verify the story that can establish my innocence to the satisfaction of the authorities. And I am equally certain that the one way to reach this man is through the columns of your magazine, which is sure to be read by a person of his scientific attainments and inclinations.

So what I am asking you to do is to publish this letter. Were I able, I would gladly pay you at your regular advertising rates for doing this, but unfortunately I am a poor man—and my scanty savings have long since gone into the pockets of the lawyer who, though skilful in saving those who are guilty, seemed powerless to aid a man who is absolutely innocent.

The crime for which I have been sentenced to pay the supreme penalty is that of train-wrecking.

The laws of California, as you probably know, make train-wrecking a capital offence, punishable by execution on the scaffold, whether or not any human being is killed or injured in the wreck.

This would have made no difference in my case, however, since the wreck which I was falsely accused of causing resulted in the death of seven persons and the disabling of many more.

If you have read the newspaper accounts of my arrest and trial you will understand what I mean when I state that I am—in a certain measure at least—a victim of public hysteria. Previous to the wreck of the Southern Pacific's crack train "The Lark" on that memorable April morning, there had been no less than three similar accidents, all within two months. In each case the express car had been looted and in each case the police had failed to apprehend the criminals.

Public indignation had been wrought up to an intense pitch and when this fourth outrage occurred there were vehement demands that the scoundrels be caught and punished to the full extent of the law.

When I tell you that on five separate occasions I have narrowly escaped being lynched, you can appreciate how bitter this public feeling had become.

It seems doubly ironical to me that I, the man who supplied the police with information which subsequently resulted in the capture of the real criminals, should have fallen into the same net.

But I fear I am rambling a bit, so perhaps I had better start at the beginning and tell the story in chronological order just as it happened.

BOB OLSEN

TELEVISION by this time is probably no longer a novelty to most of our readers. During July of this year, the Bell Telephone Laboratories staged a most impressive demonstration where television in full colors was demonstrated. Thus, for instance, the image of an American flag waving in the breeze was transmitted successfully and observers on the other end could see all not only the details of the flag, but all the colors as well.

Our versatile author has used this new branch of science as a vehicle for his present extraordinary story, which is not only exciting, but gives a good deal of food for thought. There is nothing contained in the science of this story that sometime or other will not be a reality.

A Mistake in Time

ON the morning of Saturday, April 6, 1929, I awoke with a start. For some unaccountable reason my mind was all wrought up over the idea that I had overslept. While this would not have mattered much under ordinary circumstances, it was rather disturbing on this particular day. You see, I had planned to meet the train on which my mother, whom I had not seen for seven years, was coming from San Francisco.

I hopped out of bed and looked at my watch. The hands pointed to seven fifty-six, and "the Lark" was due to arrive promptly at eight. The apartment house where I lived was about fifteen minutes' drive from the station. I figured that my mother, when she found no one to meet her, would wait at the station for at least a quarter of an hour, which would allow me just the time enough to get there, provided I dressed quickly and had reasonable luck in driving through the traffic.

To jump into my clothes was the work of a minute and I was soon in my flivver, headed for the station at a speed as swift as I dared to drive. In my excitement I had gone several blocks before I realized the unusual lightness of traffic that

morning. Ordinarily eight o'clock in the morning is one of the busiest times of the day, with a steady stream of cars going in both directions. But on that day the streets seemed almost deserted. When I turned the corner into Pico Street, one of the busiest thoroughfares in Los Angeles, there were but two vehicles in sight and one of them was a milk wagon.

Though this seemed rather singular to me, I was so intent on reaching the station on time that I merely regarded it as a fortunate circumstance, since it would enable me to make better time.

As I drove through the business section of the city, I couldn't help noticing the scattered condition of traffic and the small number of pedestrians on the street. Then a clock in front of a bank caught my attention and I was astonished to see that it was only five minutes after six. I looked at my watch. It still registered seven fifty-six. When I held the watch to my ear I discovered that it had stopped.

Perhaps you will wonder why the dimness of the light at that time of the morning had not warned me in the first place that it couldn't be as late as eight o'clock. That point was brought up at the trial and the district attorney tried to make a great deal out of it. Yet the answer is extremely simple and convincing. If you have ever lived in Los Angeles you will recall that there are certain seasons when one morning will be perfectly clear and the next morning will be cloudy until nine or ten o'clock. And the amount of light on a cloudy day at eight A. M. is just about the same as the illumination of early dawn on a clear morning.

If that explanation doesn't sound plausible to you, then just say that I was dumb or that I was too excited about the prospect of seeing my mother to pay much attention to how light it was on that fateful morning. The fact remains that I found myself but a few blocks from the railroad station, nearly two hours in advance of the time when mother's train was due.

My first impulse was to return to my apartment and go back to bed. But on second thought, that seemed a silly thing to do—particularly now that I was so thoroughly awake and keyed up. So I drove to the station, parked my car and entered the waiting room. I bought a magazine and sat down to read, but my mind went wool-gathering. My mental state was such that I found it impossible to concentrate on the printed page. At last, I gave it up in disgust, threw the magazine down on the bench and strode out in the street. Exercise was what I needed most, I told myself, as I set out on a brisk walk, but with no particular destination in mind.

I was walking along a narrow side street, seven or eight blocks from the station, when my attention was arrested by a very peculiar looking building. It was one story high and was built of stucco, colored a brilliant red. The edifice was set back about five feet from the sidewalk and the intervening space was planted with dwarf palms, cactus plants and other desert vegetation. On the roof was a very odd conglomeration of tubes, mirrors, wheels and other machinery, unlike anything I have ever seen elsewhere.

But, strange as all this seemed, amid such incongruous surroundings, the thing which attracted my attention most was a very ordinary and commonplace thing, namely a sheet of note paper tacked to the door. Overcome by curiosity, I crossed the street and approached close enough to the door so that I could read the following announcement:

NOTICE

A public demonstration of the Teleview, a new invention, will be given here daily between the hours of 6 A. M. and 6 P. M. Visitors are welcome. Admission free. Walk in.

Here, I thought, is an ideal way for me to occupy my time for the next hour and a half. I am intensely interested in both mechanical and scientific things and the prospect of witnessing the demonstration of a new invention appealed to me strongly.

Pythagoras Denker

I PUSHED open the door and entered. The room was so dark that I could not distinguish a single object. I took a step or two and then stood still, blinking like an owl. I couldn't help jumping when a thin, high pitched voice at my elbow said: "Good morning, my friend."

"Oh, good morning," I gasped, turning in the direction of the voice, "I hope I'm not intruding at this early hour. I saw the sign on the door and I came in to see the demonstration of the new invention."

"Oh, yes. And let me assure you that you are very welcome. You couldn't have chosen a better time to see the Teleview demonstrated. But won't you be seated? Here is a chair—right over here." A bony hand clutched my arm and I was led to a seat. My companion sat down beside me. "It's a bit dark in here," he apologized, "especially when you come right in from outside. But your eyes will soon adjust themselves, and there will be plenty of light as soon as we start the Teleview going. My assistant is getting things ready and she'll have it working in just a few moments. In the meantime, perhaps I ought to introduce myself. I am Pythagoras Denker, the inventor of the Teleview. While we are waiting, perhaps you would like to learn something about the nature of my invention."

"Indeed I would," I assured him.

"As the name indicates," he continued. "The Teleview is a device for viewing things that happen at a distance."

"Oh, I see," I interposed. "It's a television apparatus."

"Not at all," he corrected. "My invention is quite different from the regular televisor. To be sure, it is like television in the sense that it enables one to see things at a distance, but the essential difference between the Teleview and a Televisor is this: For Television it is necessary to have both a sending and a receiving apparatus and it cannot be used except in places where the object to be seen can be brought to the sending station or where the sending station can be brought to the event which is to be transmitted over a distance.

"The Teleview is not hedged in by any such restrictions. All the apparatus is concentrated at the receiving end. No sending set is required. Within certain limits, it may be focused on any spot so that one actually sees the events themselves, exactly as they happen."

"Do you mean to tell me that you can focus your apparatus on something that is happening in India or Arabia and be able to see it here at the very instant it is taking place over there?" I asked doubtfully.

"The task you have outlined cannot be performed quite yet, for the simple reason that the places you mentioned are on the opposite side of the earth. However, even that can easily be accomplished when we have established stations at four or five strategic points around the earth, so that we will be able to pick up any event, no matter where it happens and relay it on to our other stations.

"At present, this station has the only Teleview apparatus in existence. The range of this set is limited only by the curvature of the earth. With it I can get most of Europe and the western part of Africa to the east and the coast of Asia on the west. Naturally anything in the United States or in the portion of the Pacific north of the Equator can easily be focused in."

"Interesting, if true," I remarked, tritely. "And just what do these distant events look like after you have them focused here?"

"The best way to answer that question is to show you the device in operation. It ought to be ready by now. If you'll pardon me a moment, I'll see what the trouble is."

He had not been gone very long before the room became flooded with a ghostly light, like the wan glow of a midsummer twilight. Then something began to take shape on a screen at a further end of the room. At first I could make out nothing but a mass of clouds which swirled and throbbed and vibrated in a most mysterious manner. As the clouds slowly melted I was able to distinguish the coast line of a continent as one would expect it to look when viewed from a great height. As the image on the screen became larger and more distinct, I fancied I could recognize the contours of the western portion of Europe, including Great Britain, France and Spain.

The Teleview

THE ground seemed to be rising to meet us at a terrific rate of speed and it was but a moment or two before we appeared to be hovering over a large city. That unmistakable landmark, the Eiffel Tower, told me that the city was Paris. Whatever it was that was producing these effects certainly was giving a marvelous impression of reality. The scene looked remarkably realistic and was shown in natural colors, so that I couldn't help experiencing the illusion of looking at the objects themselves.

"What do you think of it?" said a voice in my ear, and for the first time I noticed that Denker had returned and was again seated beside me.

"Very interesting," I complimented him. "Best photography I have ever seen. The picture must have been taken from a Zeppelin, wasn't it?"

"But surely you don't think that is a motion picture, do you?" Denker demanded.

"Well, I'll have to admit that it's different from any picture I've ever seen. And when I say different I mean better. But if it isn't a picture, how in the world can you get an effect as realistic as that?"

"By looking at the scene itself," was his preposterous reply.

"This is what I tried to convey to you a while ago. The Teleview is simply a device for looking at objects from a distance. Would you like to know how it works? The principle is quite simple. Shall I explain it to you?"

"If you will, please. I'd certainly like to learn all about it."

"You have heard of a mirage, have you not?"

"Of course."

"And you know what causes a mirage?"

"I think I do. Isn't it just an image of some object beyond the horizon, reflected by a stratum of air which is denser than the atmosphere close to the ground?"

"Substantially, you have the right idea; and the Teleview works on exactly the same principle, except that a mirage can occur only under certain circumstances, while the Teleview will work anywhere and at any time—that is provided there is light enough to produce an image.

"You seem to be pretty well informed and possibly you also know that the atmospheric envelope surrounding the earth is by no means homogeneous. Every intelligent person is aware of this fact. It is not so well known, however, that the hollow sphere of air is definitely divided into a series of concentric spheres, each one differing in density from the portions contiguous to it. You can get a clear conception of this by thinking of the atmosphere as a huge and tenuous onion with the sections represented by a series of strata of varying density.

"You know, of course, that when light strikes the surface of a transparent medium such as glass, wa-

ter or air, some of the light is transmitted but part of it is always reflected. This is well illustrated by the way in which a store window will reflect your image, especially when the space beyond the pane is dark.

"That being the case, you can readily understand that the atmosphere surrounding the earth is really made up of a series of concave mirrors, which, while they permit a great deal of the light to pass through them, also reflect a small though appreciable portion of the rays which impinge on their surface.

"In the Televiewy, I have discovered a method of focusing on these stratified mirrors and of collecting only the light rays which are reflected by that one mirror. By varying the angle at which my focusing tube is inclined and by adjusting it to a stratum of just the right altitude, I can 'bring in' almost any location within a radius of several thousand miles from this point. If you think of this device as doing the same thing to light waves that the radio does to radio waves, you will see that this part of the performance is like tuning in on a particular wave length."

"I see what you mean," was my response. "But a shell of atmosphere could hardly reflect an image as clear as the one we now see on that screen there. You said yourself that only a small proportion of the light rays would be reflected by any one of your air-mirrors."

"That is true. But to return to my analogy, you must remember that the radio receiving set not only is able to pick out just one of the many waves that are constantly throbbing through space, but it must also amplify the impulses.

"In like manner the Televiewy is able to amplify the very faint images that are brought to us by our focusing tubes. If you are at all familiar with the action of light on certain chemical substances such as selenium, you can readily perceive that there is nothing particularly magical about the idea of amplifying light waves and the images which are built up by them.

"Please don't get the idea that I use selenium in the Televiewy. I merely mentioned that because it is the most familiar of the light-sensitive substances. The method which I use for magnifying images and for amplifying them to natural brilliancy is a secret that I cannot very well divulge to any one until my patents have been filed and granted. However, I think I have told you enough so you can understand the feasibility of the principles on which it is based."

What the Televiewy Saw

ALL during the time we had been conversing, the picture on the screen had been constantly changing. Most of the scenes had been unfamiliar to me and I had been too much absorbed in Denker's exposition of his invention to pay much attention to him.

But suddenly something loomed up which I recognized instantly. It was Temple Block in Salt Lake City. There was no mistaking the convex, turtle-back roof of the tabernacle, with the stately spires of the Mormon Temple rising majestically behind it.

"Why that's Salt Lake!" I exclaimed. "It sure looks natural. Almost makes me homesick to look at it."

"And do you realize that what you are now looking at is not a picture photographed some time ago but is the actual scene that is taking place there right now?"

"I'll have to take your word for that. Except that it is wonderfully well done and realistic, it might just as well be a picture so far as I can see. However, you certainly have a wonderful thing. I suppose you intend to use it principally for producing travelogs, for teaching geography and for similar purposes."

"Those are but minor uses," he assured me. The most important function of the Televiewy is to witness *important events while they are actually happening*. Occurrences which are scheduled to occur can easily be seen from start to finish. For instance, on March 4th I sat here and saw the ceremonies in connection with the inauguration of President Hoover.

"We can also use the Televiewy to witness events that are described in the newspapers, such as big conflagrations, floods, battles in time of war, and other interesting occurrences. I'll see if I can bring in something of that sort right now. Would you mind coming back to the controls of the machine? Then I can adjust it myself, instead of leaving it to my assistant; and I can explain everything to you as I go on."

"That will be fine!" I acquiesced, and rose to follow him.

It was then for the first time that I noticed the peculiarities of my host's raiment, which hitherto had escaped notice in the semi-darkness. He was arrayed in the garb of an ancient Greek philosopher.

He certainly cut a comical figure with his skirts flapping about his scrawny, bare legs. A set of mutton chop whiskers and a pair of tiny, rimless glasses, which looked like the lenses of a microscope, added to the grotesqueness of his appearance. (I fear, as I describe these unusual things to you, that you will disbelieve them. I know they sound queer and improbable, but on my oath they are absolutely true.)

"I'll operate it for a while, Eunice," he told his assistant, who seemed to melt out of sight in a most mysterious manner. I couldn't see her plainly enough to make out whether she was young or old, beautiful or ugly.

"Now let's see if I can bring in something exciting," Denker said to me as he took his place at the machine. "According to this morning's paper, the Mexican Federal troops are due to attack the Rebel forces at Corredelia. The battle should be on at full swing by now."

He referred to a large map which could be viewed in sections by the simple process of winding up the

rollers at either end. When he had located Corredella he made a quick calculation on a scratch pad, and turned a calibrated wheel until it indicated the proper figure. Then he made two other adjustments with dials like the combination of a safety deposit vault.

Then came the usual flurry of clouds and yapors which were quickly replaced by a desert scene with nothing but Joshua trees and cactus to break the monotony of the barren landscape. Apparently the machine had not quite located the spot desired, although there was little doubt that it had picked up some place in Mexico.

Denker continued to play with the dials and it wasn't long before a small village flashed onto the screen. We focused in just in time to catch the tail end of the battle. Apparently the rebels had not put up much of a fight, for we could clearly make out their nondescript soldiers hurrying pell mell out of one end of the town, while the vanguard of the attacking forces were still several hundred yards away from the other end of the village.

"Wouldn't it be wonderful if you could get close-ups of some of those birds," I cried.

"That's just what I can do," Denker responded. "Watch!"

He did something to the apparatus and the scene on the screens seemed to draw closer and closer. He finally singled out a man on horseback who looked like the leader. So close did the Teleview bring the face of this warrior that I could clearly distinguish a livid scar over the Rebel chieftain's right eye.

After a while, Denker directed the Teleview back to the village. We then witnessed a scene which was as amazing as it was unexpected. The eye of the Teleview roved from one group of soldiers to another until it rested on the Federal leader. There was no mistaking his identity. No one else but a general could have born that load of gold braid, medals, brass buttons, epaulets and other impedimenta with which that august officer had bedecked himself.

Around the general were clustered four men with motion picture cameras—apparently newsreel operators. They were engaged in an animated conversation with the general, accompanied by vehement gestures of protest.

A Sham Battle

EVEN without the accompaniment of talkie sound effects, it was easy enough to get the plot of the scenario being enacted before our eyes. The battle had been fought and won so quickly that the movie men had not been able to get their cameras set up in time to get any of the action. Apparently the general, when he realized that his glorious victory was to go down into history unrecorded by the faithful movie cameras, was even more distressed about it than the newsreel men.

He must have been a very gracious and obliging general because he issued an order to one of his aides and a few minutes later, his entire army filed back to the desert again. The cameras were set up and were trained on the troops who now began to advance with rifles leveled in a most terrifying manner.

Well as this re-enacted attack was staged, it did not seem to satisfy the camera men. The trouble with it all was that it showed only the attacking army. The defenders of the village were completely out of the picture.

The obliging general seemed willing enough to remedy this difficulty. The army was ordered to take up positions behind the barricades of the village. They shot their muskets off into the air and glared out from between the buildings, while the cameras ground out the scene at close range.

That ought to have pleased the most fastidious photographer on earth—but not these newsreel men. We could almost read their lips as they told the general that what they really needed was not separate pictures of the attackers and the defenders but one picture showing an actual engagement between the Rebels and the Federals.

Even that demand didn't seem to faze the resourceful general. He simply divided his forces into two armies—like choosing up sides in a game of one-old cat—and one section impersonated the defending Rebels while the other portion of his soldiers drew off ready to play the part of the victorious invading army. This time everything seeme to go off in grand style—even to the satisfaction of those peranickity camera men. That is, until one of the sham rebels—who apparently was a movie fan—decided to stage a death scene. After making sure that one of the cameras was turned on him he made a wild clutch at his breast and toppled over in conventional movie style.

Naturally this attracted the attention of others, both "Rebels" and Federals, and there seemed to be plenty who were anxious to rob the genius of his original idea. Within the space of a minute or two, the soldiers on both sides began to die like flies. The carnage was terrific. It wasn't long before both armies were completely wiped out and there were no soldiers left to carry on the battle.

That would never do, of course. The dead soldiers had to come to life and do their act all over again. This time the officers were seen to harangue their men and it looked as if they were assigning certain favored individuals to do the dying stunt and were warning all the others not to die under penalty of severe punishment.

Again the battle raged and the photographers cranked. Then one of the "rebels" entered so well into the spirit of the battle that he forgot himself and discharged his gun in such a way that it winged one of the attacking warriors. This nearly started a real battle, but thanks to the courage of the general, who rode between the two forces brandishing his sword in a melodramatic manner and shouting something at the top of his voice, a catastrophe was averted.

"Well, what did you think of that?" Denker

chuckled. "Wasn't that as good as any movie you've ever seen?"

"Better!" I enthused. "I never saw anything so funny in my life." *

"Well, it looks like the show in Mexico is over for a while at least. Shall we try somewhere else? Perhaps there is some particular thing that you would like to see on the Teleview screen."

"Yes, there is," I told him. I am expecting my mother on the Lark from San Francisco. She is due in Los Angeles at eight o'clock. By this time the train ought to be coming through the mountains between Burbank and Bakersville. Do you suppose you could locate the train with the Teleview?"

"I'll see what I can do."

The Wreck

IT required a little scouting around before Denker located the railroad track but after that the task seemed easy. He simply directed his receiving tube so that it kept the track in view but moved swiftly in a direction away from that in which we seemed to be looking. Soon the train hove in sight, winding around among the rugged mountains.

Denker certainly showed a lot of skill in manipulating his apparatus. He actually kept the train constantly in sight, giving the impression that we were in an airplane flying just ahead of the train and traveling at the same speed.

Suddenly something flashed onto the screen which made me catch my breath. It was a huge boulder buttressed by three heavy logs, lying between the rails, directly in the path of the onrushing train. In my excitement I forgot that I was over a hundred miles away from the scene and I waved my hands frantically and yelled: "Stop! For God's sake, stop!"

Concealed behind a curve, the obstruction was not observed by the engineer, and the train hurtled onward. I braced myself for a terrific jar, for the train seemed but a few feet away from where I was standing. But naturally I perceived neither noise nor vibration as the gigantic steed of metal crashed into the obstacle.

There was a sudden burst of escaping steam, a flash of flame, a nightmare of twisted metal, as the great train rolled over into the ditch amid a ghostly silence.

For several minutes I was held rooted to the spot, spellbound by horror. But Denker with the characteristic calmness of a scientist continued to direct the dials of his marvelous machine. First he focused it on a close up of the locomotive. The fate of the engineer and fireman could easily be deduced from the frightfulness of the wreckage. No two men could possibly have survived in that unspeakable inferno.

Then the eye of the Teleview passed on to the baggage car, and here we witnessed a most preposterous sight.

Two young men, who we could easily tell were little more than boys, approached the car from the direction of the road which at that point ran almost parallel to the rails. At first we thought they were hastening to render help to the stricken passengers, but we soon learned that their purpose was far more sinister.

Both of them carried revolvers and they walked with the furtive gaits of men who are bent on an evil errand. As they drew near to the baggage car, a man in the uniform of an express messenger appeared at the side door, which was partly open. From the look of anguish on his face and from the way he dragged his body along the tilting floor, we could tell that he was sorely injured.

Without warning, without a moment's delay, one of the boys raised his gun and shot the messenger. It was the most ruthless and horrible act I have ever witnessed.

The two youthful thugs then entered the baggage car and soon reappeared, each one carrying a heavily laden sack.

In the turmoil of the sudden catastrophe it looked as if none of the other survivors of the wreck, except the messenger, had observed the robbers. At any rate the bandits were not molested as they hurried back to the road and disappeared behind a clump of trees.

But the unerring eye of the Teleview still continued to trail them. A small touring car appeared from behind the trees and we were able to make out that the two robbers were now accompanied by a third—who had apparently been left to guard the automobile.

The way in which the Teleview kept that car in sight was positively uncanny. I was easily able to make out the license number and I remembered the most important part of it—the last four numbers, which were 1992. "That's easy to remember," I told myself. "It's the year 1929 with the last two numbers reversed—just 500 years after the discovery of America." It is by complicated mental processes such as these that we are often able to recollect with positive accuracy things which otherwise would quickly be forgotten.

Denker soon let the car containing the culprits get out of sight and then directed the machine back to the wreck. He scanned closely with the Teleview eye one coach after another.

As a close-up of one of the windows flashed on the screen I had a most uncanny feeling that I saw the terrified face of my mother pressed against the pane. Then the "eye" passed on to the next coach, which happened to be the observation car.

Up until that time I had watched the events subsequent to the wrecking of the train like one who is having a bad dream. The stark horror of the entire disaster kept me glued to the spot. But the sight of my mother's face goaded me to activity.

Without saying as much as "Thank you" or

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*EDITOR'S NOTE—*An incident very similar to this was described in the Los Angeles Times as having actually happened during the revolution in Mexico in the spring of 1929.*

"Good bye" to Denker, I rushed out of the building and dashed on a dead run to the railroad station. When I reached it, I hardly knew where to go, so I blundered into the spacious waiting room.

"Ask the man in grey! Ask the man in grey!" kept drumming through my tortured mind. So I found the man in grey and panted, "There's been a terrible accident! The Lark is wrecked! Where shall I go to report it?"

To The Rescue

HE directed me to the train dispatcher's office on the second floor of the building. Up there everybody seemed too busy to give any heed to me. Finally, unstrung to the point of distraction, I yelled out, "Hey you! There's been an accident. The Lark is wrecked! For God's sake do something about it!"

This had the effect of drawing attention to me. A man in shirt sleeves, wearing paper cuffs wrapped around his wrists, came over to the counter.

"What was that you said?"

"The Lark is wrecked in the mountains somewhere the other side of Burbank! I almost screamed.

"You're crazy," he jeered. "If there had been any wreck we'd be the first ones to know it—long before any one else could learn about it. Unless they happened to see it happen."

"But I did see it happen!" I cried. "It was only five minutes ago."

"I thought you said it was the other side of Burbank. How in Sam Hill could you see something that happened that far away only five minutes ago? Even an airplane couldn't make it that fast."

He didn't wait for my answer to his query for at that moment some one called him. "Hey, Bill, for the love of Mike get back to your key. We just got a flash that the Lark is in a bad wreck four miles from Calinta Junction."

And amid the excitement caused by that announcement I was again left to shift for myself.

As I stood there I overheard a man who was frantically talking to some one over the telephone. "Man the relief train. Put it on track four. Have Webb phone all the doctors he can get that are likely to be within a mile or two of the station. And for God's sake make it snappy."

That put an idea into my head. I would contrive to get on that relief train. And the easiest way to crash the gate would be to pretend I was a doctor. The scheme worked even better than I had expected. Ten minutes later I was on the train, thundering northward.

I shall not attempt to describe the horrors which met our eyes when we reached the scene of the wreck. The details of the surroundings, the position of the locomotive and the dozen or more coaches, all were exactly as I had seen them a short time previous in the Televiev. But several of the coaches had caught fire and we knew that there must be many human beings imprisoned inside them and in imminent danger of perishing in the flames.

Without wasting a second, I seized an axe and rushed for the coach just ahead of the observation car. It was lying on its side. I counted off the third window from the front, the window at which I had seen the face which looked like my mother's. One end of the coach was already aflame. There was no time to lose. Crash went my axe, breaking the glass into a hundred pieces. I lowered myself into the opening and there huddled against the further side of the coach I found the crumpled form of my mother. She was unconscious, but something more than hope told me that she still lived.

There were other human beings in that car, some lying motionless in grotesque attitudes and others writhing and moaning pitifully, but, God help me, I gave no heed to them in my single-minded efforts to rescue the one who meant more to me than any one else on earth.

I finally succeeded in dragging my mother through the shattered window to safety in the open air. Then I carried her, fireman fashion, to the relief train.

"Where can I find a doctor?" I implored the conductor of the train as I laid my mother on a couch in the improvised hospital.

"A doctor?" he bellowed. "I thought you said YOU were a doctor. What do you think we took you along for, anyway?"

How well that conductor remembered all the details of this incident when he testified a month later at my trial.

I don't remember how I answered the conductor's accusing question. I was too absorbed in watching my mother. A flicker of her eyelids and slight tremor of her body told me that she was recovering consciousness. A moment later her eyes were opened. She recognized me and amid inarticulate cries of joy we threw our arms around each other. Luckily mother was not seriously injured. She had merely fainted from the shock of the collision.

It was not until I had taken her home to my apartment that I remembered about the criminals whose dastardly deeds I had witnessed in the Televiev. I phoned the police station and told the desk sergeant that the murder and robbery had been committed by three young men who drove a Sussex car with a license ending in the numbers 1992. Without giving my name or address, I hung up the receiver.

However, I subsequently learned that the officer was smart enough to get in touch with the telephone operator immediately and in this way he easily traced the call to my apartment.

My tip turned out to be a good one. There were several cars registered with those four final digits on their license numbers, but only one of them was a Sussex. It belonged to Amos Kerr, a youth of nineteen, who, with two other young men of uncertain occupation, occupied an apartment only four blocks away from where I lived.

Guilty

WHEN their rooms were searched, most of the loot stolen from the baggage coach of the Lark was found in their possession. A few articles identified as having been taken from the three previous wrecks were also discovered there.

It was three days after they were apprehended that my own arrest occurred. At first the police told me that I was to be held as a material witness because of the information I had supplied regarding the car used in getting away from the scene of the crime. But when it transpired that I had announced the occurrence to officials in Los Angeles several minutes before the news came in over the telegraph wires, I was booked on suspicion of complicity in the robbery.

This, coupled with hatred inculcated by my "squealing" on them, undoubtedly suggested to the three culprits the dastardly plot of which I subsequently became the victim. They knew that the evidence against them was so enmeshing that they could hardly expect to escape the noose. Their only hope was an appeal to sympathy on account of their youth. And to bolster up this idea they conceived the infamous idea of making me the scapegoat. They accused me of having planned all four of the train wrecks in which they had participated. They represented themselves as weaklings—mere tools of an older man who had enticed them into lives of crime and had taught them all the tricks of their nefarious trade.

On the witness stand their stories agreed with suspicious perfection. It was glaringly apparent that they had been coached—probably by their lawyer. But the jury believed them, which perhaps was not surprising in consideration of the other corroborative evidence which was introduced at the trial. The most damning testimony of all was that given by the "Man in Grey", the train dispatcher and the conductor of the relief train.

The prosecuting attorney succeeded in having written into the records the obviously erroneous statements that I had announced the occurrence of the wreck fully ten minutes before it actually happened. The fact that I had lied in representing myself to be a physician was also used as evidence of my depravity.

At the preliminary hearing I had told the complete story of witnessing the wreck on the screen of the Teleview. In their efforts to verify my statements, the police searched the entire neighborhood within fifteen blocks of the railroad station in all directions, but were not able to locate any building such as I had described. The name Pythagoras Denker was not listed in the telephone book nor in the city directory.

Under the circumstances my attorney advised me not to take the stand at the jury trial. "No one would believe your yarn," was the reason he gave me. "The jury will only think you are a colossal liar and that isn't going to get you anywhere."

My obvious defense was that I was the victim of a frame-up. The district attorney parried this by demanding how—unless I was in league with the train wreckers—I knew the wreck was going to happen and told the railroad officials about it before it actually occurred.

Since I was not permitted to tell about the Teleview, this damaging question went unchallenged and unanswered.

My lawyer came near scoring a point when he brought out that if I were a part of the gang I would hardly be likely to report the number of the automobile to the police.

The prosecuting attorney's answer to this was that I had begun to fear detection and that I had squealed on the rest of the gang in order to divert suspicion away from myself.

Perhaps the strongest argument for my innocence was the presence of my mother on the train. It was hardly conceivable, my lawyer pointed out, that I would plot to wreck the very train on which I knew my mother was a passenger.

In replying to this, the district attorney painted my character in the blackest of hues. He said that a man who would teach innocent young boys to commit such dastardly crimes would be fully capable of murdering his own mother!

You already know the outcome of the trial. I didn't blame the jury. Had I been one of them and had a stranger been in the defendant's place, I would undoubtedly have voted as they did—GUILTY."

Kerr and his two companions were sentenced to life imprisonment and I was condemned to die on the gallows. The reason given by the judge for the severity of my sentence was that I was a mature man and had been found guilty of plotting a crime and of inducing minors to commit it. Because of the other defendants' youth and because they pleaded guilty he felt justified in sentencing them to prison terms.

So here I am—condemned to die. And the only man who can save me is Pythagoras Denker. I pray and hope that he may see these lines before it is too late and that he will submit to the constituted authorities the indisputable evidence that my story, of having witnessed the wreck of the Lark with the aid of his invention, was the gospel truth.

In closing, let me express the appreciation of a condemned man for your kindness, Mr. Gernsback, in publishing this letter.

Yours gratefully,
HARVEY BLAKE.

EDITOR'S NOTE: We were just ready to go to press with this issue of our magazine when we received a second letter from Mr. Blake, which is reproduced below:

Dear Mr. Gernsback:

Since mailing my recent letter to you I have received some wonderful news. The Warden, who has been good enough to interest himself in my case, secured from me a carbon copy of my former letter to you and sent it to the Governor. For-

tunately our present state executive is himself somewhat of a scientist. He was broad-minded enough to realize that there was nothing impossible or even improbable about my story of witnessing the wreck by means of the Teleview.

The Governor has given me a sixty-day reprieve, in order to allow your magazine to reach every part of the world and also gave me his assurance that as soon as Mr. Denker is located and verifies my story I will immediately be released from prison.

Something tells me that, with the help of your magazine, Mr. Denker will be found, and will vindicate me; and I will be saved from a fate I do not deserve.

Yours respectfully,
HARVEY BLAKE.

THE END

My Little Martian Sweetheart

***By* The Planet Prince.**

How this man-filled world seems vacant
When the long earth-day is o'er!
As I sit in my apartment
On this hundred-twentieth floor.

Then my mind goes soaring upward
Far above our dreary ken,
To a desert, dying planet,
And a dying race of men.

Oh, my little Martian sweetheart
In your crimson world afar,
I will soon be up to greet you
In my little space-o-car.

You will steal away to meet me
In the garden in the air,
O'er the great canals that vanish
'Neath the polar ice-caps' flare.

And we'll swoop into the darkness,
On our stellar journey start,
While your tiny Martian moonlets
Through your fearful heavens dart.

Passing them with speed of lightning,
Scaling steeps of untold height,
Darting through a whirl of comets,
Dashing through a spray of light.

Diving, gliding, climbing, looping,
Through the universe of space,
Till the warm red blood is pumping,
And we check our headlong pace.

Sailing there in all our splendor
Through the darkest voids of space,
Far from where our distant Daystar
Shows his point-diminished face.

And you'll turn those red lips upward,
Eyelids dropping like a hood——
Careful, little Martian sweetheart,
Earthly man is not of wood!

For those blue eyes, all alluring,
Seem to beg a loving kiss,
And my dreams float swiftly backward,
To the scenes of Terra's bliss.

For I see a Terrene cottage
Hung with vines of earthly green
Where, my little Martian sweetheart,
You will reign, my lifelong queen.

So, my little Martian sweetheart
In your crimson world afar,
I will soon be up to greet you
In my little space-o-car.

What is Your Knowledge of Science?

Test Yourself by This Questionnaire

1. What are the limitations to the use of television for picking up a scene? (Page 489).
2. What is a mirage? (Page 489).
3. What is suspended animation? (Page 501).
4. How many cells does the human brain contain? What would be the potential intelligence of a being with twice as many cells? (Page 502).
5. What is the atomic weight of gold? (Page 517).
6. What does this indicate about its atomic structure? (Page 517).
7. What changes to the atomic structure of gold would produce mercury? (Page 517).
8. Why would not unlimited gold increase the total of our wealth? (Page 519).
9. From what is our bodily energy derived? (Page 526).
10. What is the danger of a race being free of disease for many centuries? (Page 549).

The Killing Flash

by Hugo Gernsback

A SHORT, SHORT STORY

I cut him short with: "Take that, you monster!" —and, jumping back, I press the switch. There is a blinding flash.

Illustrations by Paul.

March 1.

YESTERDAY Lindenfeld signed his own doom, although he did not suspect it. Years ago it started at college. I stood one sly insult, one injury after another. Always he came out on top. Always he won. I was always the vanquished, the one bested. He beat me in every sport and every competition. So that, at the end of the term, we were bitter enemies.

But, by that queer chance of destiny, it did not stop there, for we both settled down in Beauford; and, by another stroke of Fate—that irresponsible goddess who often governs our lives—we both went into the same line of business, almost at the same time. It took each of us a few weeks to find this out, and then it was too late. My pride forbade me to go into another venture, so I stuck it out. Within the year, Lindenfeld had put me out of business. That, however, could have been endured; but not his last and crowning insult.

Yesterday, he eloped with my fiancée. That signs his death warrant. Of the long list of insults, offenses and near-crimes, this one *must* be the last. The sooner the world is rid of this monster, the better.

As soon as he returns, I shall kill him with my own hands, but so subtly, oh, so subtly, that *only he* will know that I killed him. And no one will know how he met his death.

As a scientist, this should be easy for me. I will use an entirely new method, something new in murder. Simple. Yet subtle. Very. And the police will never find out how it was accomplished, because *I will kill Lindenfeld by long distance.*

This is the plan. I will rent a little loft in the busy east end of the town. Here I will gradually assemble my high-tension apparatus, a 5-kilowatt generator, a 350,000-volt step-up transformer, condensers, and various other electrical paraphernalia. When everything is connected up, I will attach the output of the 350,000-volt transformer to my telephone line. I will then call up Lindenfeld on the telephone and make sure that it is he who answers. I will make it my business to find out that he is home *alone.* I can readily find that out by one or two extra phone calls to his house. Then, when he answers me, I have but to step back from my phone and press a switch which controls the 350,000-volt high-tension current. The deadly current will leap over the telephone wire to Lindenfeld's house. A long spark will jump between the receiver and the transmitter, and as Lindenfeld's head is between them he will be electrocuted instantly—not, however, without first having heard my voice.

March 15.

Everything is in readiness. The machinery is installed. Its works beautifully. Of course, I rented the little place under an assumed name, and I wear a disguise. No one can trace me, *even if they knew how the beast was killed.* Most murderers overlook one little

detail. I don't. Everything is planned scientifically. Minutely. Painstakingly. I put a phone call in five minutes ago. I asked for Mrs. Lindenfeld, my former sweetheart, in a disguised voice. *He* answered, the cur. She is out.

I call up River 2650. He answers. I say: "Do you know who this is?" There is a momentary pause: "Sure I know," he laughs derisively. "My *dear* old friend, John Bernard, what gives me . . . ?"

I cut him short with: "Take that, you monster!" ——and, jumping back, I press the switch. There is a blinding flash, as the transformer discharges into the telephone line.

I have killed Lindenfeld!

* * *

March 22.

BEAUFORD TELEPHONE CO.
Beauford, N. Y., March 21, 1929.

Mr. John Bernard,
16 Locust Ave., City.

Dear Sir:

We received your interesting letter, as well as the manuscript entitled, "THE KILLING FLASH." You ask our advice whether or not it is possible to kill a person over a telephone line as indicated by you in your ingenious manuscript.

For the benefit of the country, we are glad to state that we believe the scheme to be impractical.

While there are isolated instances of people having been killed by high-tension discharges, due to telephone wires having crossed with power lines, such cases are exceedingly rare.

The reason is that the high-tension discharge usually becomes grounded before it has traveled 100 feet over the telephone line.

In your case, the suppositious Lindenfeld would no doubt, have heard a series of loud noises in his phone, but he would not have come to harm.

Sincerely yours,
BEAUFORD TELEPHONE CO.,

March 22.

(Newspaper account from the afternoon edition of the *Beauford Eagle.*)

John Bernard, 26, of this city, single, manufacturer of patented appliances, was found dead this morning in a loft at No. 627 East Worth Street. His terribly mutilated body was identified by Henry Lindenfeld who, it was divulged, owned the loft.

HUGO GERNSBACK

From an unopened letter, found at his residence, with an enclosed manuscript sent by The Beauford Telephone Co. to him, it is clear that he planned to kill Henry Lindenfeld by connecting a 350,000-volt high-tension transformer to the telephone line. Upon calling up his enemy, he is presumed to have closed the switch which was to electrocute Lindenfeld.

Bernard, however, never received the letter from the Beauford Telephone Co. telling him his murderous scheme was impractical as, indeed, it proved to be. Lindenfeld at 9:30 P. M. yesterday received a telephone call from Bernard who spoke threateningly over the 'phone, ending up with: "Take that, you . . . ." That was all. Lindenfeld hung up his 'phone and later retired.

But as Bernard pressed the switch, 200 lbs. of high explosives stored on the floor above—no doubt set off by the high-tension discharge traveling along the joint telephone cable to the next floor—blew up and in the wreck Bernard was crushed to death, hoist as it were by his own petard. His funeral will be held from Levitow's Funeral Parlors tomorrow.

* * *

April 1st.

SCIENCE WONDER STORIES
Office of the Editor

Mr. David Friendly,
119 W. 46 Ave., Springfield, Ill.

Dear Sir:

Sorry to find it necessary to return to you your manuscript entitled "THE KILLING FLASH."

It is a nice story and fairly original; but there are a number of weak points which should be eliminated before we can use the manuscript. For instance, the worst is that, in the story, Bernard certainly would not have written to the telephone company telling them about his plot to kill Lindenfeld. That would, of course, have caused his arrest.

Then, too, the story is improbable; because Bernard, if he had any sense, would not have written down the assertion that he killed Lindenfeld. If you can fix these various points, maybe we can use the story.

Sincerely Yours,
SCIENCE WONDER STORIES
By O. Utis, Ass. Editor.

THE END

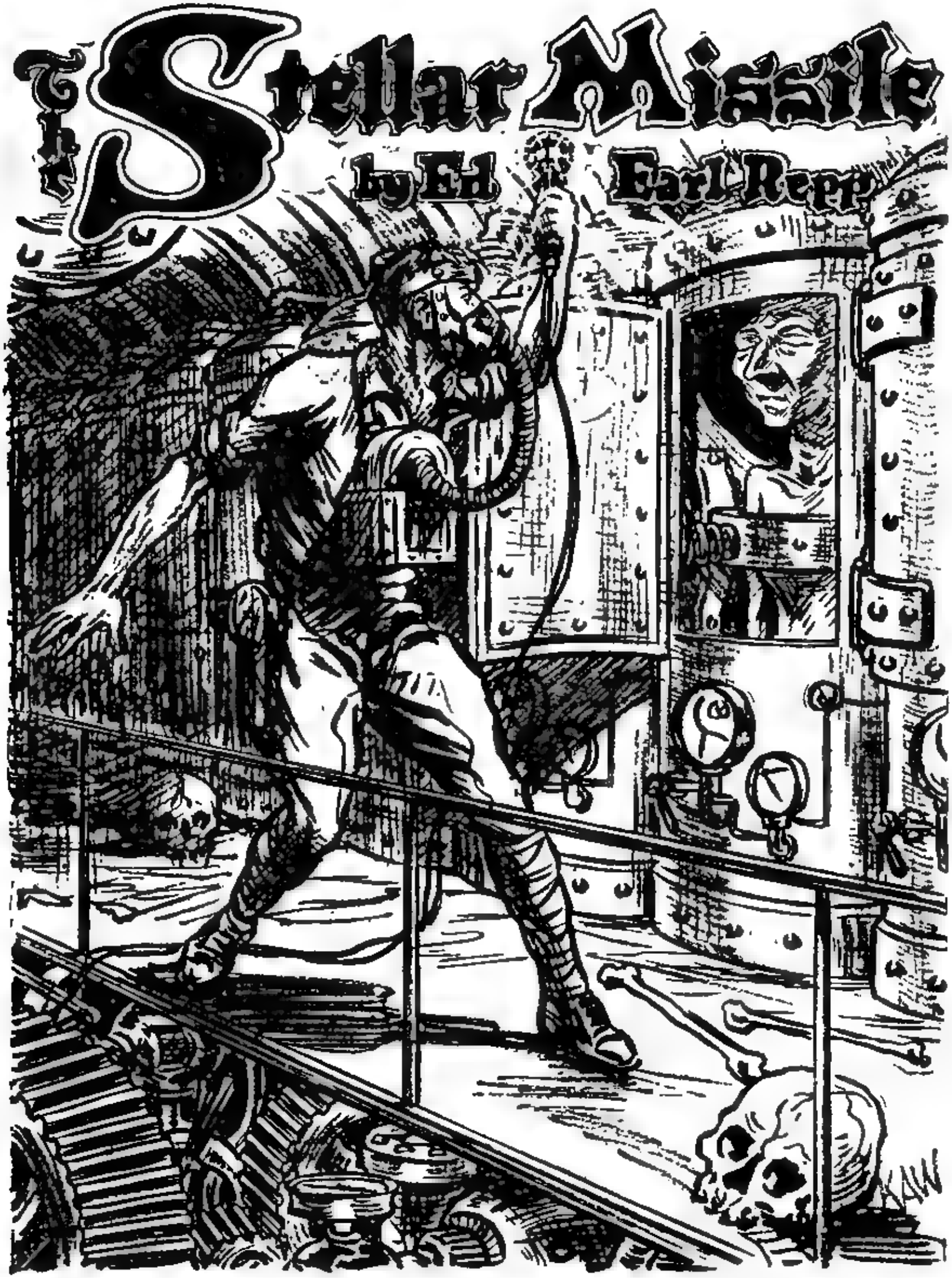
THERE having been no short, SHORT science fiction stories published heretofore to the best of our recollection, for the benefit of our readers, the editor had to undertake the thankless job of creating a model (?) story.

Authors and would-be authors of short, SHORT science fiction stories, can see from the sample that it is possible to put quite a mass of material into 1400 words without sacrificing either science, action or plot. And the [illegible] allows the inclusion of one or more surprise endings.

It is hoped, however, that future authors will not be unduly influenced by the vehicle used or the treatment which Mr. Gernsback has given this story.

The Stellar Missile

by Ed Earl Repp



There before his very eyes were several hundred metallic containers. In each he discovered a living body representing some unknown race of grotesque beings. Each was thin, haggard and carried all the appearance of death.

Illustration by Winter.

THE STELLAR MISSILE

By the Author of "The Radium Pool," "Beyond Gravity," "Beyond the Aurora," etc.

"NOW look here, doctor, you've performed some wonderful feats in medicine. You have found the cure for sleeping sickness, haven't you? You have performed wonders with that cancer serum which you formulated. You have brought relief to suffering humanity for fifty years. You are really the pillar of modern medical science, although you will not admit it. Let's see now. You are approaching seventy-eight, aren't you? though I can see no visible physical effects of your respectable age. But people are beginning to whisper that old Doctor Farrington is losing his grip. After the many wonderful accomplishments you have achieved for the sake of humanity, taking into consideration your vast knowledge of science, it appears to me that by this time you should have found no difficulty in formulating a drug powerful enough to bring those poor devils out of their suspended animation! There is not a man on this globe, in my opinion, who can do it should you fail. If you do fail—as I have the utmost faith that you will not—then our race will of necessity be deprived of a secret which we have striven to learn since the beginning of time."

After he had finished speaking, Professor Brandon squirmed disconsolately in his big, roomy chair in the lounge of the Scientists' Club and eyed Dr. Miles Farrington speculatively. The eminent physician had been listening to every word, a heavy scowl obvious on his compact visage. It was evident, too, that the physician resented his friend's attitude in the matter. He fixed his eyes, which in spite of his advanced age, were clear and penetrating, upon the professor. For twenty years these two distinguished scientists had been as close, almost, as brothers, and this was the first time during all those years that Professor Brandon had opened a broadside of reproach against this world-famous medical and surgical authority. Perhaps the professor was getting "on edge" at the delay of the medical world in solving a problem which he had unearthed three years before, when he had actually entered the 10,000,000 ton Barringer Meteor in Arizona.

Yes, Professor Brandon had actually entered the 10,000,000-ton mass of metals which for years had been thought nothing more than a tremendous meteor. Furthermore, he discovered something else that had set the entire world aflame with excitement. Within the hollow center of the great globular mass, swung up tier upon tier in light metallic containers above a labyrinth of intricate but useless machinery, Brandon had found evidence of life! And what life it was!

On encountering the mass, like all scientists in the past, he had thought it nothing more than a meteor. His entrance into the spacious confines of its interior had been accomplished quiteaccidentally. So entranced was he on reaching the metal body that he was not content to allow his explorations to rest. He called for the helio-acetylene torches which had been introduced for heavy cutting back in the early part of 1965. Brandon desired to return to the surface with melted-out specimens of the strange metal of which the meteor was composed. And suddenly the reddish-green flame of the helio-acetylene torches burned through the tough plate which formed the exterior frame of the celestial body.

Only his assistant and some laborers who were with him at the bottom of the shaft when the metal mass was encountered could fragmentarily describe Brandon's amazement when the powerful flame cut through. I will not attempt to elucidate his astonishment here—it must have been beyond mere words. I will relate, however, that Brandon immediately called the surface foreman on the phone and demanded extension cords and radium lamps to guide him into the dark, ill-smelling interior of the celestial body. While waiting for these he set to work enlarging the hole, burning and cutting the hard metal until it was large enough to admit his well-rounded frame. Then with lighting apparatus in his hand, a mask on his face to protect his lungs against the evil odors and rank sulphur gas, he entered alone. He had forbidden his assistant and laborers to enter until he had first determined the safety of the adventure.

The exceedingly brilliant radium lamps exposed the interior of the celestial body in its entirety! Brandon saw dusty machinery and mechanism on all sides of him. One end of the space-traveler was stoven in for a distance of many feet. The machinery there was a

WE are certain that the present interstellar story by our gifted author will find your approval. Scientific authorities all over the world are unanimous in their opinion that interplanetarian travel presents no greater difficulty than the landing of a space flyer on a distant world.

We have means today to shoot a missile into the void so that it will never return, but the difficulty will come if we wish to land one safely.

And not until there has been developed a complete technique of interstellar flight, will it be a safe undertaking to travel from one world to another.

In this unusual story, the author has made this plain and, in addition, has given us an entirely new angle on inter-planetarian stories. There is nothing contained in this narrative that is not within the realms of good science.

broken mass of useless levers, valves and heavy tubing! On the only deck Brandon's hobnailed boots encountered what appeared to be bones of human beings of medium size, and skulls, apparently human, twice as large as his own. Then Brandon's eyes roved overhead. He instantly beheld rows of metal containers, covered and battened down. With several long strides he reached a short ladder leading up to a bridgeway, which ran along the rows of man-length containers. Opening one of the latter and gazing intently at its contents for several seconds, he leaped away; nearly tumbling off the bridgeway to the floor below.

What Professor Brandon saw there was to cause the greatest furore the world had ever known, and he kicked himself on the shins to determine that he was awake. There before his very eyes were several hundred metallic containers! In each, as he discovered, was a living body representing some unknown race of grotesque beings! Each was thin, haggard, withered and carried all the appearance of death. Eyes shrunken in enormously large sockets, noses small, lips firm, cheek bones high and prominent, heads huge and entirely bald, faces wrinkled through lack of nourishment over a long period, barrel-chested bodies and slim limbs describes the creatures Professor Brandon discovered in the containers. They seemed immersed in deep, restful slumber.

Scientists Puzzled

So intent was Brandon on studying these strange living creatures who, to all his understanding of life, should have been dead for perhaps ages, that he did not hear the approach of Dr. Valeri, his anthropological associate. Valeri had become uneasy at Brandon's delay in returning to the opening in the mass of metals and had forthwith entered to investigate. Here he was, standing beside Brandon on the bridgeway, eyes popped open in astonishment, mouth agape. He recovered himself and drew a heavy hand across his brow. The movement jarred Brandon's elbow, bringing him out of his spell of immobility. Brandon's voice shattered the stillness of death which hung over the interior of the giant metal mass. It sounded like a voice coming from an awesome abyss.

"Valeri!" Brandon's voice seemed smothered but coming distinctly through his gas mask as he tugged at the straps supporting it at the back of his head, to remove it: "This find nearly killed me! Am I a blithering lunatic or have I been dreaming?"

"I'm afraid we are both crazy, Brandon!" Valeri returned. "But if my eyes behold the same as yours, then there's no question of our sanity. What do you see?"

"That's just the question, Valeri! What do I see! In my line of vision are containers that must hold several hundred shrunken creatures. They appear to be sleeping soundly, yet they do not breathe and I cannot rouse them. It is not necessary for you to tell me that they are not from this world! I can see that easily enough!"

"You are perfectly correct in that, Brandon!" Valeri agreed. "I have never encountered any human being or animal of the human chain on this earth who could compare with them. And I'm not likely to, either. It is also my opinion that they are from a different planet. This great machine proves that!"

"How do you account for their being able to maintain life? It is beyond my power of reasoning to even hazard a guess. They look like 'sleeping-sickness' patients I've seen years ago in the days of the plague."

Valeri squinted at Professor Brandon, his eyes as blank as Brandon's face before the matters and problems which faced them. Being scientists—and world-famous scientists as they were—does not imply that they could not be rank laymen when considering fields outside their own geology and anthropology.

"I'm up against the same wall that you are, Professor," Valeri answered complacently; "I'm just a layman now, although I can tell that they are not earthly beings. Suppose we call Dr. Farrington to come here: he should be able to give a satisfactory diagnosis and proceed accordingly?"

"Right again, Valeri! I hadn't thought of Farrington," conceded Brandon, slapping a thigh vigorously: "I've been too damned attentive to those poor beasties! It's a wonder the immodest bigheads didn't have some clothes on, though!"

"We should not attempt to rouse them. We might bungle something. Anyhow, if earthquakes, ground upheavals and all that couldn't bring 'em out of their peaceful slumbers, I'm afraid our chances would be zero!"

Valeri laughed. "I'm taking one of these skulls, however. I want to look it over under the microscope."

With that they climbed down to the deck. Valeri stopped long enough to pick up one of the skulls, pale green in color and about the size of a regulation basket-ball. They crawled through the opening and herded the laborers out of the shaft. On the surface they placed a heavy guard at the entrance with orders to admit not a single person without Brandon's signed order. Brandon handed his signature for identification to the foreman whom he placed in charge of the watch, and strode off to his field laboratory some yards distant, Valeri at his side.

Entering the laboratory which also served as his office and home, Brandon walked to a corner and sat down before a black rubberized cabinet. Opening the doors, he slid into view a small white screen which turned to fathomless black at the turn of a handy button switch. There came a slight buzzing sound from the interior of the cabinet. Brandon always kept his compact television set in perfect working order. He twisted a single dial into a low waveband and instantly a large room appeared on the screen. Farrington, in the private operating room in his palatial residence two thousand miles away, was performing a delicate surgical operation upon a patient, and could not answer. A white-capped nurse, however, stood before the television

screen in Dr. Farrington's office, requesting the caller to make contact half an hour later; the doctor would accept the message at that time.

There is no necessity for me to go into further detail concerning Brandon's efforts to interest Dr. Farrington in his discovery. Considering the magnitude of the discovery itself, that is a trivial episode. The world already knows through the international press, television and radio, what took place when Dr. Farrington entered the terrestrial visitor. Everyone knows that Dr. Farrington diagnosed the cases of the big-headed strangers as "Suspended Animation."* He declared that the suspension of animation had been brought about through the injection of some powerful drugs into the persons of the creatures. The effects of this, he reported to the excited and awed world, would not wear off until an unknown drug was injected to counteract the power of the suspension potions.

From then on the medical world seethed with activity. Recognized medical experts the world over turned their attention toward the preparation of an antidote. Their tireless efforts availed them nothing and at the end of three years of ceaseless research they had given up in despair. Dr. Farrington had alone continued.

CHAPTER II

A Tense Moment

NOW here was Professor Brandon, most famous of geologists, foremost in his subject as was Dr. Farrington in medicine and surgery, questioning his friend's ability in the matter of creating a serum for breaking the spell of suspended animation; haranguing his evident failure to furnish the specific through which the world hoped to bring consciousness to the several hundred grotesque creatures and therefore learn from whence they came, when they left their home planet and what manner of beings they were.

True, Dr. Farrington had successfully scratched sleeping sickness off the list of incurable diseases. Yet here was a form of sleeping sickness confronting him that for years had defied his every effort to evolve an antidote to efface its grip from the creatures! Here was an insurmountable wall against which the world's greatest medical minds struggled for even the slightest handhold to enable them to mount and conquer it. Farrington knew that Brandon was right. The people were whispering behind his back—had been whispering behind his back for months. He also knew that his fellow scientists were beginning to lose their respect for him. He, Dr. Farrington, was reputed to be such an undefeatable old medical master mind, that now they felt his previous discoveries were mere accidents rather than the results of long years of tireless endeavors.

Dr. Farrington, in spite of his age, considered himself in the prime of his profession. He straightened himself and cast a newspaper which he pretended to be reading, into a corner with a half muttered oath. He stood erect, an admirable sight to behold, of a man, who for half a century had done wonders—miracles for mankind. Professor Brandon seemed cowed in his plush lounge chair, and continued to squirm disconsolately but more self-conscious under the towering physician's steady scowl.

Groups of men on the other side of the Club's lounging room twisted to survey the famous "iron man of medicine" at the sound of his chair scraping against the floor. The disgusted manner in which he had cast the crinkling newspaper into a corner, and its thud against the wall, had drawn further attention.

The atmosphere in the lounge suddenly became tense. To everyone present there was a feeling that a storm was about to break. They attuned their ears to listen for the outbreak which impended. Furtive glances were cast at Professor Brandon, who sat, plainly withered, under the eminent physician's glare, thinking over his words and endeavoring to recall any one in particular that could have so offended the aged medical scientist.

Farrington himself recognized that he was faced with a dire crisis. It was on such occasions as this that he had been known to blow up, literally. He felt that he was being forced to make a statement—he believed that he must make an announcement or forever take a back seat in the medical profession. He turned his back upon Professor Brandon coldly and walked to the end of the hall to stand beside the big open fireplace. He faced the gathering in the lounge. The silence which hovered over the room was almost audible. Even the clang of the traffic on the street ten floors below was forced into nothingness by the oppressive quietude until Farrington spoke; then it sounded like the roar of Niagara.

Farrington Speaks

THE eminent physician cleared his throat, as though to demand further attention from those in the lounge. Groups of threes and fours stood stiff as Imperial Guardsmen at attention. They felt that they were about to learn something from the man whom they had been criticising a few moments previous. Dr. Farrington's voice smote the attuned ears like steel grating upon steel.

"To begin with," Dr. Farrington began, "are there any newspapermen present? If so, they will please step forward!"

Quietly three men stepped forth before him, each believing that the story they had hounded so long was to be realized. One was the star reporter of the *World*, one just a cub from a rival paper; the last an editor of an internationally-recognized scientific organ. Dr. Farrington eyed all three, evidently recognizing the *World* man and the editor, and he addressed them.

"I'm sorry, gentlemen, but I have no statement to make for the press at this time. I beg of you

* *Suspended animation is a medical term given in a recent medical dictionary as "a temporary state of apparent death.*

not to accept my harshness with any personal feeling. I desire to chat confidentially with my fellow club members. You will therefore respect my wishes. Young man"—he motioned to me, for I was the cub—"if you understand shorthand you may take a chair at this desk and record what I have to say. But understand, like everyone present, you are under obligation not to divulge anything I say. You are not to submit my statements to your editor until I have officially released you from your obligation!"

Luckly I understand shorthand and trembling with excitement, I sat down at the desk near the towering physician, notebook at hand and pencil shaking in my fingers. Here was my big chance to score the biggest scoop since the discovery that the Barringer Meteor was in reality an interplanetary ship! It would virtually make me the idol of my paper—I would thereafter strut around the editorial room, being pointed out as the star reporter of the *Bulletin*.

Dr. Farrington stood, statue-like, for several moments before continuing. Then again his strong voice rang out above the din of the traffic below.

"As I take it," he said, "you gentlemen, including the eminent Professor Brandon, are inclined to believe that I am losing my grip, or in other words, failing rapidly. Professor Brandon speaks as though I have lost command of my faculties! If I have, I assure you that I have experienced enough during the past six months to cause such a thing. Yet I resent it! I resent your very apparent attitudes toward me since I entered the building tonight! Some of you gentlemen evidently fail to realize the difficulty of the problem which confronts members of the medical profession. Perhaps it is beyond your power of conception, or perhaps it is just plain ordinary ignorance! I am not so vain as to ask you to respect me as a man. Rather do I demand that you respect that man's achievements! Some of you who never performed a more serious surgical operation than that of removing a common appendix cannot realize the seriousness of our present situation.

"Before I launch into a detailed account of the results of my work of the past three years, I wish to say with all due respect to my friend, Professor Brandon, that his knowledge of the subject, the matter of evolving an antidote for the overcoming of suspended animation—something that has never before confronted this world—is very limited. I grasp from the manner in which he approached me for information regarding my activity in the matter, that his knowledge of what is at hand stopped abruptly with his discovery. Mechanical science can create deep gorges which must necessarily be bridged by medical science. Mechanical science, of which Professor Brandon is the foremost authority in the world today, may laugh up its sleeve at the medical profession. It usually does because it does not understand!

"As you are all aware, Professor Brandon three years ago succeeded in recovering an interplanetary visitor from the desert of Arizona. You are also acquainted with the facts surrounding the discovery and what existed within the metal mass. Many of you have seen the big-headed, barrel-chested Stellarites who are living—yet for the most part dead to the world! If this great mass of metals is actually an interplanetary ship, do you have a single hypothesis as to how far advanced in scientific achievements those creature are? Would you doubt my veracity if I claimed that those strange beings have had millions of years start on the people of this globe, and are therefore millions of years our superiors in culture, science, medical and mechanical accomplishments? Would you grant that they are by far our superiors in every single field of human activity? That is what I have learned through various methods of deduction!

"Granting that the so-called Stellarites are our superiors; then how do we, figuratively embryonic human beings, expect to cope successfully with a hitherto unknown form of drug having the power to achieve something else that we have never before been confronted with—suspended animation? Do you think that we humans, with our miserably small minds and brains, can absorb in a few months the knowledge, and achieve the accomplishments of a race of creatures so far in advance of us as are these Stellarites?

"It may interest you gentlemen to know that for three long years, night and day, I have been working on, and experimenting with the living, but dormant brains of typical specimens of the strange beings who have been described as having tremendous heads, small features and smaller anatomies. In my experiments I have learned many things of which the world was heretofore in complete ignorance. Comparing the brains of the Stellarites with the brain of a living human being I determined that the terrestrial visitors have command of approximately 18,000,000 brain cells whereas the human brain contains but 6,000,000 cells as its capacity for thought. Under those circumstances, the Stellarites' brains are just three times more capable than our own; making it possible for them to learn exactly 9,000 new things each day where we are capable of learning a mere 3000—provided, of course, that we utilize our cells constantly as we tread along the path of life. Quite astounding to some of you, isn't it? I can see before me several visages which prove that some of you have failed utterly in exercising your allotment of brain cells!"

Several members of the physician's more or less distinguished audience moved uneasily under his penetrating eyes. I, as my pencil literally flew over the pages of my notebook recording in shorthand the startling words of Dr. Farrington, heard twitters of amusement float through the room. I glanced around. Others extremely interested in this rare lecture which the physician was meting out, smiled thoughtfully. Dr. Farrington then resumed.

"Few of us make use of the brain cells by means of which nature provided us the power to advance.

But let me tell you something! The brain power which we have within the confines of our craniums is so infinitesimally small in comparison with the capabilities of the Stellarites that it is a miracle how we manage to exist—notwithstanding our weakness for calling ourselves highly educated human beings!

"We, who have boasted of the brains of the universe—I consider us as being mere pigs of the rank barnyard species in comparison. Now! How do I arrive at all these conclusions? Some of you are questioning my veracity; so I'll explain.

"In my efforts to formulate an antitoxin to banish the grip of suspended animation which was placed upon the creatures, I removed the brains from my experimental subjects. Through tubular contact with their main arteries I have succeeded in maintaining the life, just as it was.

"You have all been aware of the continued absence of my son Thompson. Many inquired of him several times, and I told you that I had dispatched him to Europe for a consignment of radium. Now permit me to explain his sudden disappearance!

An Astounding Statement

"I have succeeded in placing Tom in a state of suspended animation! Of a certainty, that is an astounding statement—and a startling experiment for a father to perform upon his own flesh and blood! Yet I was forced to do it in my efforts to solve this great mystery confronting us. Tom consented readily enough. In fact he preferred to do it rather than permit me to experiment upon another subject. And you may believe me, I am sorely grieved in allowing the experiment to take shape!"

At Dr. Farrington's abrupt disclosure the room became a hubbub of conversation. Dr. Farrington mopped his perspiring brow, a hand clinging to the mantelpiece over the fireplace, in such a tight grip that his knuckles showed white. Professor Brandon seemed awe-struck at this all too evident sacrifice by his friend in furthering the advancement of science. There was dramatic tragedy in that. Professor Brandon began to regret the pressure he had placed upon him, in the anxiety to learn what had been done by him in the interests of the Stellarites. He looked closely at the doctor. There was something tragic in the sudden appearance of many new wrinkles around his once firm mouth. The crow-feet at his eyes instead of reinforcing the once humorous twinkle of his eyes gave now an appearance of great sadness. With a bound that would have done justice to an athlete, Brandon was at the physician's side, his lips pouring forth sincere regrets. Farrington managed to smile to his friend, but to Brandon that smile was one of utter dejection. Yet Brandon, as were the rest in the room, was due for a greater shock as the result of Dr. Farrington's forced announcement.

Farrington called for silence and once again the room was deathly quiet.

"You gentlemen have forced this issue," he continued, his face set in a mask as pale and bloodless as marble, "and I am prepared to act in response. Sit down, gentlemen! I will continue as far as my experiments have carried me.

"Through the same method of maintaining life in these strange beings, I have been able to maintain the throb of life in the brain and body of my son Tom. I have attached tubes of my own creation between the brain and several different connections of the anatomical valves; these for the connecting link with life. I have pumped the hearts and arteries free from blood and injected therein a toxin comprised of Adrenalin", Radium H", and Tiridium Sol C", thereby preventing the hardening of arteries through disuse.

"I have made a new and intensive study of the human brain in my efforts to end the suspension of animation. I have made minute comparisons between the brain of my son Tom and the brains of the Stellarites. That is how I have been able to explain the number of brain cells in the human cranium. I have studied the brain of Tom and compared it with the brains of my terrestrial subjects. By making these comparisons, I have learned many things. I have learned that the Stellarite creatures in early youth would have the faculty of advancing theories even on subjects too profound for our mature minds.

"Do you understand what that means? It means this: The most highly-intelligent human being on this globe is but an embryo in comparison with the Stellarites! That is why we modern men are confronted with a problem without parallel in the history of this world. We must consider ourselves in that embryonic state when striving to match brains and wits so far in advance of our own. Consequently here we are, trying to evolve something of which we have been heretofore totally ignorant. We are endeavoring to achieve something in the world of medicine to break the power of drugs prepared by a people so far our superiors as to place us in the position of an infant human trying to theorize the calculus!"

Once again Dr. Farrington was interrupted. The lounge fairly buzzed with the sound of voices—of men talking in low tones among themselves. There was anything but disrespect in the words which leaked through to the cub reporter. I had worn down two long pencil points in jotting down Farrington's words, and was preparing to begin my recording anew with my fountain pen when the physician's voice startled the gathering again.

"If I may have your attention, gentlemen; permit me to dwell upon my research work in conjunction with my experiments. Through my observations, calculations and assumptions, I have been able to determine why we found those several hundred Stellarites living under circumstances that should have brought death. I do not intend to appear an authority on this matter. I have had the pleasure of working with Dr. Valeri, the anthropologist, and Professor Dennison of the new Ritchey Observatory recently erected on the highest pinnacle of Grand Canyon not far from where the interplanetary ship came to rest. Valeri, Dennison and myself arrived

at this conclusion only this morning. That is—when the interplanetary ship was sent from the unknown world, four full crews were aboard. One crew was awake when it left, to operate the ship. Three other crews were placed in suspended animation by the Stellarite scientists. With the passing of years during the period over which the ship was traveling on its voyage to this earth, the first crew reached its span of life and they revived the second crew from its peaceful slumbers to continue operating the ship. Remains of the first crew were either cast overboard or fed into the propellant tubes. They evidently expected to make a safe landing on this globe and then return to the home planet. Their scientists had probably figured out the distance between their planet and our own; and the fourth crew, after the revival of the third, were to return with the ship.

"Dr. Dennison informs us that, when the ship encountered the earth's gravitational pull, it came down with such a terrific speed that its loss was only natural. Results were that the ship crashed, burying itself 2,000 feet below the surface of this earth, instantly killing the operating crew and leaving those in suspended animation alive, only because they were encased in a marvellous shock-absorbing device. Hence the bones Dr. Valeri and Professor Brandon discovered on the deck of the ship.

"Although this bit of information has nothing to do with the efforts of the medical profession to create an antidote to revive the unfortunate beings who remain in suspended animation, I feel that it is of great importance to you. In telling and explaining this portion of our problems I do not wish to pose as an expert on the subject of extra-terrestrial matters. I am what you might call an amateur in the affairs of the heavens and repeat only the results of my work done in collaboration with Valeri and Dennison, whose study in their particular fields, merged with mine, has brought about the aforesaid conclusions. And now that I have acquainted you with the situation surrounding the Stellarites, permit me again to return to the subject with which I can more intelligently deal."

CHAPTER III

A Father's Tragedy

"IN studying the brain and cranial structure of these creatures, I have located a spot directly under the parietal bone at the base of the skull where an injection instrument had penetrated to start the flow of the drug, producing suspension of animation, through the cerebral passages. I have taken that particular section of the lower brain which has complete control over the reasoning faculties, power of will and combined muscular action, and learned the ingredients of the drugs which had been injected into the subjects. That is how I have been able to place my dear son Tom in the same state of suspension as the Stellarites!

"But now comes the most tragic, ironic point of my research. Thus far I have been unable to create a complete antitoxin with which to release the grip of the drugs embracing my son Tom and my other subjects! There remains but one single drug element to make my formula a success in combating the power of the suspensive potion! With that one all-powerful ingredient, our tireless labors would end and we could revive the Stellarites and learn their secrets—and I would have the power to return my beloved son, Thompson, to a state of normal animation!

"My experiments on the brain of my son have lasted over a period of months until, disheartened, I restored his brain to its natural state, hoping and praying that I might yet revive him. Today he is living, yet dead to the world as far as consciousness is concerned! His brain is functioning perfectly, his organs are ready to begin working normally but he is sleeping what I have begun to fear will be an eternal slumber. My heart is torn for him; for had I not over-estimated my capabilities, he would be with us now!

"Needless for me to say that we have searched this world for even the slightest trace of a substantial element that would bring about the completion of my formula for destroying the power of the drugs over my subjects. I have experimented with every atom of medicine and drug known on this globe! I have created many new forms of medicines, antidotes and formulas as the result. But my intensive work has availed me nothing—Every known plant element on this globe has been studied for its chemical properties; yet not a single trace of the desired ingredient—the lost element—has been found to complete my formula!

"Gentlemen, I am afraid that the missing ingredient does not exist on this earth! I am of that opinion as the result of many long months of ceaseless research. My colleagues in the matter have arrived at the conclusion that the missing element will never be obtained outside of the home planet of the Stellarites! I agree with them. It seems to be a natural product of their planet itself! This globe is absolutely void of it! Therefore you can realize the futility of our work—our endeavors to revive those unconscious creatures. And you can understand without my explaining—the dire predicament in which I have placed my beloved son, Thompson. Moreover you are aware of my own position—that of a father who has sacrificed his own flesh and blood, disregarding everything held dear to him—just for the advancement of science. Respect or scorn for me does not matter! Yet I beg all of you to bear these secrets among yourselves.

"My friends, I have grown old and terribly tired during these last few months. I have had more than my share of life. I have enjoyed to the fullest extent the love and admiration of my fellow men. I have striven hard to aid them, yet some have retaliated with smirks and sneers! Face to face with my present situation—considering the impossibility of obtaining an antitoxin that will revive my dear son to normal living—I no longer crave life on this world! The Great Abyss yawns for me and I am tired and weary. I am afraid that this world will of necessity forego the knowledge that could doubt-

less be handed to us through the revival of the Stellarites. I feel certain of it! Yet I am not quite ready to give up. The Great Abyss can wait until after I have tried once again—for the sake of my dear son Tom. If I fail I will be content to rest with him in the eternal sleep of doom, for without him life will not be worth living. I am an old, old man—a very tired old man and I need my son!

"My last hope lies 2,000 feet below the desert surface of Arizona. I have become obsessed with a desire to search once more, every single bit of debris and wreckage contained in the huge mass of metals from the outer regions, for even the slightest atom that can be added effectively to my formula. It is the most likely place in all this world where such a thing might be found; though we have searched it many, many times and found nothing of any interest to me. My purpose for coming here this evening was to ask Professor Brandon to accompany me back to the buried terrestrial visitor. I have communicated with Dr. Dennison and Dr. Valeri, and they believe that another search will avail us no more than previous searches. Yet my last hope lies within the hulk of that mass of wreckage. If the lost element does not exist there, gentlemen, then the greatest tragedy that could ever befall a man will have become a reality in my life, and to atone for my heartless ruthlessness I will gladly sleep the sleep of doom with my son. If Professor Brandon feels disposed and can accompany me to Arizona for a final search of the interplanetary ship, let him rise and assert himself! I thank you, gentlemen!"

Astounded at Dr. Farrington's heart-rending speech, the groups of men in the lounging room merged into one in a mad effort to get to his side to grip his hand in the powerful clasp of faith and friendship. Confusion reigned in the room as I ended the record and looked at Dr. Farrington. The famous dean of the medical and surgical world was bracing himself against the massive mantelpiece at the end of the room. He coughed nervously for an instant and straightened himself as though he were trying to fight off something terrible. With an effort he walked from his post and settled into a chair beside his friend, Dr. Brandon. The Professor placed an arm around his shoulder as Dr. Farrington smiled weakly, up at the glowing features of the medical men grouped around them. His lips opened. I listened attentively.

The Cub Scores

"GENTLEMEN," he said, softly, waving a nervous hand. "I knew all the time that your regard for me was sincere, and I appreciate your evident favor at this dire moment. Permit me to apologize for my insulting words. I'm sure that you understand just how I felt in the face of things. I do not blame you for your attitude toward me. I should have made an announcement before this. But it ran against my grain to admit defeat and I was not yet ready to explain the absence of my dear son, Tom. Please live up to your pledges, gentlemen, and do not discuss in public the facts that I have just given you. And now if you will permit us, I would like to speak privately with Professor Brandon. May I?"

"Why Dr. Farrington," said a voice filled with respect and excitement, "we'll leave this room so silent and vacant that you'll think it is the tomb of King Tut!"

"Thank you, Dr. Jarvis," Dr. Farrington said, smiling wanly: "I knew you would. You see I'm an old man and can't get around like I once could!"

"Old man, did you say?" came several voices in unison.

"Lord, I'd like to have seen you when you were a youngster"! Dr. Jarvis said, playfully shoving his companions toward the door. The room became silent except for the crackling of blazing logs in the open fireplace. I remained, expecting Dr. Farrington to give me further advice concerning my shorthand record of his lengthy talk. He eyed me for a moment and then nodded for me to come to him. I walked shyly toward the seated scientists and handed my notebook to Dr. Farrington. Without a word he took and glanced over its pages. I expected him to return it to me then but he shoved it into a pocket and bade me be seated. I glanced at Professor Brandon. He smiled at me. I felt Dr. Farrington's eyes boring into me as I turned toward him. He scowled as though deep in thought.

"Young man," he said, suddenly, "What sheet do you represent?"

"The *Bulletin*, sir," I answered, wondering why he had asked that.

"An excellent journal, my boy," he volunteered: "I knew the publisher very well. How do you stand with the editors?"

"I'm just a cub reporter, sir," I answered, hesitatingly.

"Just a cub? Why, son, you ought to have a better position than that," Dr. Farrington said.

"Well, you see, Dr. Farrington," I said, sheepishly, "I just got out of college and dad thought it would be better for me to learn the newspaper game from the bottom. You see, I'm the publisher's son and he wouldn't make a star reporter out of me unless I earned that rating."

"You are what?" said Dr. Farrington, leaning forward. "Are you John Rankin's son?"

"I am, sir," I replied.

Dr. Farrington slapped a hand on his thigh.

"Well I'll be ————!" he exclaimed, shoving a hand toward me. I took it in a firm grip. "I thought there was something familiar about your face that caused me to single you out to record my talk. You've got an honest face, son! Just like John Rankin! There never was a cleaner, more upstanding, honest man than John Rankin."

"Thank you sir," I said, "I'm glad you feel that way toward him."

"Cub reporter, eh?" Dr. Farrington mused. "John Rankin's son a cub reporter on his own journal! That's just like John! But we are going to see about that—yes sir, we are going to see what can be done about it. What do you think, Brandon?"

"Well we could take young Rankin along with us

to Arizona and if we succeed in our efforts to obtain your lost element, he'll have earned the right to a better position on the *Bulletin*," Brandon said, nudging Farrington.

"You'd scoop the world with that story, wouldn't you, son?" Dr. Farrington asked.

"It would be all that I need for those hard-boiled city editors to sit up and take notice," I replied: "They haven't much respect for a cub reporter and dad insists that no partiality must be shown me."

"Just like him, son," Dr. Farrington said: "You've got to earn what you get, the same as your father earned what he's got. But you run along now and meet us here at nine o'clock in the morning and we'll take you to Arizona in appreciation of your work in jotting down the records. You've earned it! And tell the old bear John Rankin that you are going whether he likes it or not! Tell him if he fires you you'll give the story to the *Chronicle*. That'll bring him around. Good night, son!"

What transpired in the lounge of the Scientists' Club following my departure, I do not know. I went direct to the office of the *Bulletin* and reported to the city editor. I asked him to assign me to Arizona to 'cover' the activities of Dr. Farrington, but he refused point-blank. I threatened to resign from my position and go to "Meteor Crater" of my own accord, but the city editor laughed and handed me a piece of foolscap upon which to write my resignation. Ordinarily, like any other son of his father, I might have gone direct to my dad for the Arizona assignment; but I hesitated. He was absent from his guarded, den-like office, anyhow. I presumed that he had gone home.

Resolved to accompany Dr. Farrington and Professor Brandon to Arizona at any cost, I stamped out of the editorial room, jamming on my hat as I went. Disconsolately I wended my way through the milling crowds on the street and eventually found my car parked along the curbing. I jumped into it and went home to pack my grip.

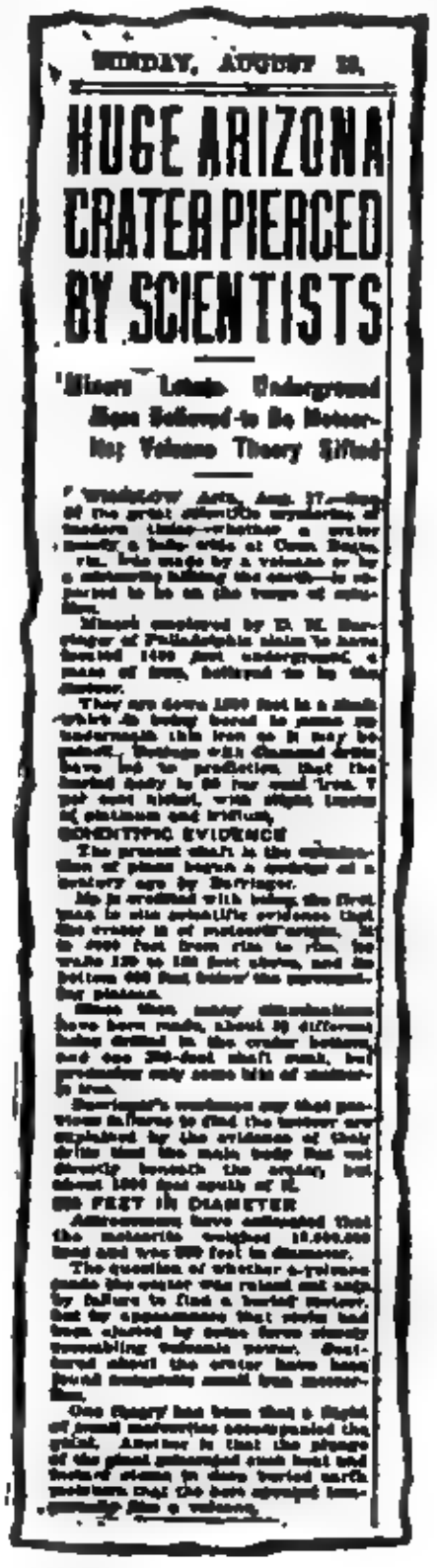
Much to my surprise my father, the stormy old petrel that he was, consented immediately to give me the Arizona assignment. He believed that a 'trick' at corresponding would be excellent experience. I told him what had taken place in the lounge of the Scientists' Club and his brows clouded. I dwelt briefly upon the Stellarites and explained in more detail the situation in which Dr. Farrington had placed his son—and himself. He sat still—very still, as I recounted Dr. Farrington's touching words concerning his great sacrifice for the advancement of science.

"So you see, dad," I said, appealingly, "I want to be in the interplanetary ship if Dr. Farrington finds the missing element. I want to get at the human side of this story. It will startle the world when he releases it."

"God, what a sacrifice!" he exclaimed, as though paying no heed to me as I rambled on about the story. "What a sacrifice for a man to offer to his gods—what wouldn't science do to further its aims?"

"It is a tragedy, dad," I acknowledged, tensely.

"It is, my boy," he said, "and I pray to God that he finds that which he seeks—for the sake of himself and his boy. To hell with science and the Stellarites! By all means, son, go to Arizona with him—help all you can, and advise me personally the results. I'd like to 'phone him and express my sympathy, but to do that would put you in a bad position in so far as he trusts you explicitly to keep his experiments secret. He wouldn't thank you for telling even me, his boyhood chum."



SUNDAY, AUGUST 18.

HUGE ARIZONA CRATER PIERCED BY SCIENTISTS

'Mineral Lode Underground Now Believed to Be Meteoric; Volcano Theory Sifted

SCIENTIFIC EVIDENCE

200 FEET IN DIAMETER

This clipping from a recent issue of the Los Angeles, Cal., Examiner, indicates the great scientific interest in the possibilities contained in the Winslow Crater.

Into the Ship

THE flight to "Meteor Crater" in Arizona was uneventful. I had arrived at the Scientists' Club shortly before nine o'clock and soon after Dr. Farrington and Professor Brandon arrived. Immediately we went directly to the airdrome and entered a passenger ship that was to take us direct to the crater.

I was indeed amazed at the magnitude of the wide indenture in the desert terrain as we circled over it at a high altitude. It suddenly reminded me of the craters on the moon I had seen through the powerful telescopes of the Jamaica Observatory, near my college.

Presently the ship was landed, a short distance from the crater, and we went directly to a small building around which several armed guards loafed lazily in the shade. Inside we changed clothing in preparation for descending into the interplanetary ship 2,000 feet below the surface.

Hurriedly I donned overalls and a jacket that Professor Brandon handed me, and looked around. Over in one corner stood a small compact television set. Around the walls of the small building were

arranged in various positions the necessary equipment of a chemist. In another corner stood a bright, metallic box, its corners rounded off until it looked like a casket. I walked over to observe it closer.

"That's one of the containers in which we found the Stellarites, Rankin," Professor Brandon volunteered when he beheld me studying it: "Those poor devils had a long sleep in those things. There are more below, in the wreck. By the way, Dr. Farrington, did you say Valeri and Dennison would be here to help us?"

"Yes, but they must have been delayed," Dr. Farrington replied, buttoning his jacket: "They'll be here shortly. Meanwhile we'll go down to the ship."

I glanced at Dr. Farrington's face as we finally entered the shaft that led downward at a sharp angle, to the broken mass of metals and mechanism that was once an interplanetary ship. His features were hard and set and his eyes glinted with a determined light.

Professor Brandon ordered the armed guards to remain at the entrance of the shaft. We eased our way down through the narrow, brilliantly-lighted hole slowly, a peculiar odor reaching my nostrils as we neared the bottom. Gradually we slid and crawled downward and eventually Professor Brandon disappeared from my line of vision. He had entered a narrow hole and gone into the confines of the visitor from outer space. Dr. Farrington followed him and I entered last, tense and thrilled at the prospect of exploring the huge interior of the oval-shaped interplanetary ship.

What I beheld when I entered the globular visitor from the outer spaces, caused me to gasp violently. In one end lay a mass of twisted mechanism of a kind that I had never seen on this earth. On the deck lay scattered bones and skulls that seemed strangely human, yet distinctly different from human skeletal remains. I stared, open mouthed, around the interior of the Stellarite visitor. On all sides were hanging wires, and heavy tubing that hung in twisted, misshapen masses down to the dusty metal floor. To the left were several units of strange machinery that resembled the motors of a great ocean liner, although more compact and smaller. I walked over to study a series of governor-like balls above the units. Under the brilliant glow of radium lamps, previously strung overhead to illuminate the interior of the ship, I could see almost in detail every single bit of mechaniam that was not covered by dull, metal housings. Closer to the wall I beheld another series of spheres of bright metal forming almost a complete circle with a larger sphere in the center. I marvelled at them, wondering what odd use they could have been to the operators of the strange ship.

I glanced around for Dr. Farrington and Professor Brandon. They were engaged in a careful search of the floor and crevices at the end of the visitor where its nose seemed to be smashed and torn from some great impact. They paid not the slightest attention to me, so engrossed were they in their careful search for some indication of the lost element or remains of the Stellarites' antitoxin itself. I felt that I too should be searching, but I could not tear my eyes from the peculiar mechanism of the ship.

Slowly I moved through machinery that was housed like centrifugal pumps. Occasionally I tested a lever for the feel of its working and frequently I placed my fingers on strange switches that I felt controlled some portion of the mechanical structure of the ship. Eventually I arrived at the far end of the visitor, in which were a number of small openings that seemed to enter into other compartments. I stooped over to look into one. It glowed brightly under the illumination of radium lamps and I entered it confidently.

Scarcely had I stuck my head through the opening when I began to cough severely. I clamped my forefinger and a thumb across my nostrils to shut out the nauseating odor of sulphurous gases. I looked around to learn the contents of the compartment. I was amazed to find that the walls contained a series of strange panels that resembled the control boards of an ordinary television broadcast station. Knobs and dials were everywhere. Even at a height beyond my reach, delicate instruments were disclosed by the brilliant light. Leading up to them was a short ladder affair that rose to a bridge-like grating running horizontally along the higher panels. Surely, I thought, here must be the control room from which the Stellarite pilots operated the huge interplanetary ship as it hurtled through space toward this world.

CHAPTER IV.

What Farrington Found

UNABLE to remain in the compartment without air, I stepped back again into the main room of the strange ship. Although the air was not pure there, the sulphurous odor was not so strong and I released my nostrils. With the spirit of adventure gripping me tightly I entered one of the other openings, which led into another compartment. Row upon row of flat surfaces, like shelves in a kitchen cupboard, met my eyes. The compartment must have contained several hundred such shelves; and I arrived at a conclusion instantly that here was the room into which the Stellarites retired when off duty during their trip to this globe. I kicked at a strange-looking piece of bone as I strode to the hole for an exit, and went out. As I once again entered the big room I felt that Dr. Farrington and Professor Brandon could get along without me while I explored the other compartment.

Quickly I entered still another hole. How strange, I thought, it was that the Stellarite doorways were nothing but round holes; that, to enter, a man must almost get down on all fours. I bumped my head severely as I stuck it through. The interior was totally dark and I wondered, as I nursed my stinging head, if this compartment had been explored. Thrilled I crawled through the hole, barely able to squeeze myself past the obstacle that almost closed it. Inside I stood still for an instant and struck a

match. The floor was littered with squares that appeared to be paper. I picked one up, burning my fingers as the match reached them. I struck another and another as I explored the compartment. The square crinkled in my hand like paper; but were not the kind of paper we of this globe have been accustomed to. I stared at the sheet intently. It was fairly covered with tiny hieroglyphics as though jotted down at random. Did this piece of odd paper contain some of the pilot's numerical calculations computed in space? I wondered if Dr. Farrington or Professor Brandon had seen it, and I shoved it into a pocket in my overalls and continued my explorations.

After burning my fingers a number of times, I picked up a dusty square of the paper-like parchment and held a match to it. I was surprised to learn that it was not inflammable. I fished through my pockets for something with which to fashion an impromptu torch and eventually found in my vest several folded sheets of foolscap. I twisted it lengthwise and touched it with a match. It flamed and by its sputtering glow I continued around the compartment which seemed to be slightly larger than the other two. In one corner rested what appeared to be a table. I touched it and it swung like a gyroscopic compass. With sudden interest in gyroscopes I rocked myself to feel the firmness of the floor. It moved slightly! So the decks and mechanism and everything within the strange ship were swung by a gyroscopic principle after all, I thought. I remembered some of my training at college, and marvelled at the genius of the Stellarites in matters of physics and dynamics.

As I walked slowly around the compartment, absorbing every detail for future reference in writing the story, I found myself staring at a cylindrical object, about ten inches in length, lying on the floor. It shone brightly as the glow of my torch fell upon it and I stooped over to pick it up. It seemed very heavy and firm and I looked at both ends. They appeared to be closed tightly. I jammed it into my pocket with intentions of giving the cylinder to either Dr. Farrington or Professor Brandon. Shortly I came upon another table that was littered with the strange squares of parchment. Glancing at them closely I saw immediately that they were covered also with the strange hieroglyphics. I began to study some of them and abruptly my torch sputtered and went out. I searched my pockets for a match but I had exhausted my supply. I was left in the inky blackness of the compartment. After glancing around I saw a thin ray of light issuing from the far side. I picked my way to it slowly and stooping over I crawled back into the main room.

For several seconds I stood rubbing my eyes to ease the smart of the brilliant lights. Scarcely had my eyes become accustomed to the light when Dr. Farrington, stooping over a mass of mechanism and twisted steel plates in the opposite end of the ship, gave an exultant shout. I heard the clatter of feet overhead as Professor Brandon ran along tiers of metallic containers, on the bridge-like grating. Without waiting to use the ladder that led down from the bridgeway, he slipped through a rail and clung to the grating by his hands, dropping suddenly to the floor on which I stood. I shot a glance at Dr. Farrington. He was tugging frantically at a piece of heavy machinery that lay in the pulverized earth at the crushed nose of the ship. I leaped over some twisted tubing and reached his side almost as Professor Brandon arrived.

"I think I've found it, Brandon!" Dr. Farrington shouted, exultingly: "Here, give me a hand! Go easy! I don't want any earth to sift through these cracks as we move this piece of machinery."

Instantly Professor Brandon laid his weight on a steel block that apparently housed some Stellarite apparatus, and it moved slightly. I took hold of a corner and the three of us lifted it slowly from its resting place. Earth began to pour in through a wide crack in the wall of the ship and Dr. Farrington threw himself forward to hold it back, his arms outstretched as though to shield some precious, breakable object.

"What is it, Dr. Farrington?" Professor Brandon asked, tense and eager. I looked over his shoulder, wondering if the doctor had suddenly lost his reasoning.

"Look, Brandon! Look at this!" he yelled hysterically.

Professor Brandon bent over closely to observe the object shielded by Dr. Farrington's outstretched arms. I looked over his shoulder, seeing Dr. Farrington's convulsed features. I stared between his protecting arms, as Dr. Farrington began to laugh strangely. Professor Brandon was silent as we stared, unable to move a muscle, at a tiny, plant-like object that protruded from between two thick, bent plates, glowing with a pale green luminosity that cast weird shadows across Dr. Farrington's features. The thing seemed alive!

How closely it resembled some tiny earthly plant, I thought, as I regarded it through wide, staring eyes. And it was actually moving! I gasped when the thing suddenly turned its tiny branches upward, like the feelers or antennae of a butterfly.

"See, Brandon!" Dr. Farrington suddenly shouted, his voice filled with exhilaration: "See this piece of metal, twisted into an indistinguishable mass? That, Brandon, must have been one of the vials in which the Stellarites stored their supply of antitoxin—their restorative."

"It looks like a metal vial, indeed, Dr. Farrington," Professor Brandon said, with rising hope. "Let me see it!"

"No! Wait, Brandon, while I look closer!" Dr. Farrington said: "By God, that's what it is, Brandon! See? It was either thrown or rolled to this spot, and was crushed. Its contents spilled out on this little damp spot here and that plant sprung up from it! Do you know what that means, Brandon, my friend? I feel—I feel that this little plant is part of what I need to restore my son Tom to animation! You don't understand that, do you, Brandon? You just about called me an old fool in the Scientists' Club! But, Brandon, my friend, I'm a wiser old fool

than you think!"

He laughed madly, hysterically, for several seconds. Professor Brandon continued to stare silently at the little glowing plant. How silly, I thought, that Dr. Farrington should suddenly rave over the discovery of a weed that might have been found almost any place on the desert. But all weeds do not glow and perhaps there was something about that tiny plant that I did not know. And there was!

"Come here, Rankin!" Dr. Farrington said, suddenly while I stood lost in strange thoughts of plants and metallic vials: "Come here and have a look at this! I want you to be able to describe this plant when you write the story for your father's journal!"

The Radium Weed

I LOOKED again. The tiny plant sputtered with a pale green luminosity. It was actually alive, but still I could not see how such a tiny, unimportant thing as a weed, growing 2,000 feet below the surface, could repel the all-powerful grip of the drugs that caused suspension of animation in the body of Tom Farrington and some two hundred Stellarites. Professor Brandon stood up as Dr. Farrington spoke from his reclining position; he must have read my thoughts and volunteered to ease them.

"You are trying to figure out just how I plan to use this plant, aren't you, Rankin?" he said, in a fatherly sort of way: "How about you, Brandon? Have you any idea how it is to be done?"

"No I don't, Farrington," Professor Brandon said, dusting his hands: "I admit that I'm totally ignorant of botanical fantasies——"

"Fantasies, eh?" said Dr. Farrington, scowling: "So you still think I'm too old to know what I'm doing, is that it, Brandon?"

"You win, Farrington," Professor Brandon said, with a smile: "I'm so excited that I mixed fantasies with categories. I've made many mistakes in my day, Farrington, and I admit right now that I made a mistake in the Scientists' Club when I called your hand. I bow to your vast knowledge, your achievements and the man that you are. My hat is off to you! And now let's get that thing out so you can stand up. Here, I'll scoop the whole thing out with this slab of metal."

"Go easy, I don't want a single twig broken from this plant," the doctor said; as Professor Brandon reached down to scoop it up in a thin piece of metal that he had picked up from the floor.

Carefully he forced it down into the damp, pulverized earth between the two plates of metal and slowly lifted the clod containing the plant, from the crevice. I helped Dr. Farrington to his feet. Professor Brandon set the metal sheet on the steel block and hunched down to regard it. Dr. Farrington mopped his brow and likewise squatted. I stared over their shoulders at the odd specimen.

"You see, Brandon," Dr. Farrington said, with mounting joy, "That vial spilled its contents into the pulverized rock somehow when this mass came to an abrupt stop here. As a geologist you probably understand that there is no water around this mass of metals and therefore plant life could not exist. You are also aware that plant life such as this, could not exist at this depth without nourishment of sun light. Without the rays of the sun it could not germinate.

"It is my belief that, when this interplanetary ship plunged to earth, it carried also masses of vegetation from the surface. The tiny seed of this plant must therefore have come from above, and gradually worked its way into the crevice from which we have just removed it. Coincidentally the contents of the vial were spilled or drained upon the seed and it began to germinate. The reason for the continued dampness around the plant's roots is simple indeed, to one who understands radium! It is not a miracle that the seed germinated so slowly and grew only to its present size. Perhaps ever so often it took on a new life, began its growth over and continued to grow annually; or perhaps it is one of those rare flowers that will live as it is for an astonishing long period of time.

"But at any rate, the seed of this plant was soaked with the contents of the vial. It gradually grew, absorbing the moisture from the liquid that was spilled on it, with results that we have here a plant that contains in its tiny veins the same identical matter that caused its germination. It could contain no other plant matter—it could not have any water because water does not exist here. It could not have any other moisture; because no other moisture can be found within the vicinity of its germination. I can identify the matter that courses through its veins by the odd glow. It is the radium it contains that has caused me to believe that at last I have found the drug. This plant, I will call it the Radium Weed, if what I hope is true, contains atoms of each ingredient or element which comprised the drugs prepared by their scientists to revive the suspended Stellarites! Brandon, I feel I have found it!"

I stared, amazed, unable to speak for a moment. Then my mind began to revive to study what he had said and there came the finger of doubt that literally forced a question to my lips.

"But, Dr. Farrington," I said, swallowing hard. "Didn't you just say that the seed of plant life could not germinate without the rays of the sun? How, then, could the seed of this plant germinate down here where the sun's rays have never penetrated?"

I noticed Professor Brandon staring at me, curiously. He switched his eyes from me to Dr. Farrington, questioningly.

"Well, Rankin," Dr. Farrington replied, "I rather expected a question like that and I am prepared to answer it. I'm glad to see that you are so alert. But listen and I'll explain for both of you.

"Radium, my friends, contains practically the very same heat as the rays of the sun. It has that same power of warmth and the same identical properties as the sun's heat. Each atom of radium contains a certain amount of strange electrons. We find these very electrons in the rays of the sun—so many per

atom. We have therefore arrived at the conclusion that the sun's heat and light is nothing more than atoms and electrons cast off and brought to earth. Consequently the seed of this plant did not require the actual sun rays to germinate it. Radium acted upon it with the same power as the sun acts upon plant life on the surface. The pale green hue of the plant proves it."

"Well," Professor Brandon, said suddenly, "I guess that ends our search for the missing element, Farrington. There is no doubt but that you have a great desire to get back home—to Tom. Let me congratulate you upon your great discovery. It means more to this world than the world will ever realize, I'm sure."

"Yes, Brandon," said Dr. Farrington eagerly. "I want to get back as soon as possible. I do not wish to waste a single moment in returning to my son. It is a glorious feeling, Brandon, to know that Tom's restoration is perhaps only a matter of a few short hours."

"Shall I carry your Radium Weed, Dr. Farrington?" I volunteered, "It'll be rather difficult for you to make the ascent up the shaft with it."

"Not at all, son," he replied. "I can take care of it. I do not want the sun to strike it. It may shrivel and dry up. You might look around for something to wrap it up in, however."

What the Parchment Told

IMMEDIATELY I scanned the floor of the terrestrial visitor and then remembered suddenly the cylinder that I had found in the compartment at the other end of the ship. I pulled it out of my pocket and twisted the cap that fitted tightly over one end.

"Perhaps this cylinder will fit the bill," I said, tugging at the cap. "I picked it up back there in that dark compartment. It must have been overlooked when the ship was explored before. It ought to hold the plant nicely."

"Let me see that thing, Rankin!" Professor Brandon said, taking the cylinder from my hands.

He shook the cylinder gently. Something rattled in it loosely and he twisted the cap. It refused to come off and he reached down to the floor for a sliver of heavy steel. The room resounded with the dull thumps as he hammered gently against the cap to remove it by percussion. With a warning to Dr. Farrington and myself to step aside, he gave the cap a hard thump and it flew from the cylinder, rattling dully on the metal floor.

Instantly Professor Brandon tilted the cylinder and from its open end came a roll of the strange parchment which I had seen in the compartment. Interested, he sat down and unrolled it. Dr. Farrington looked over his shoulder. They studied it intently for several moments and presently I heard the sound of rattling stones coming from the shaft. I looked up at the sound of muffled voices and two men entered the room through the hole made in the casing of the ship. I assumed at once that they were Valeri and Dennison. Dr. Farrington and the professor did not lift their eyes from the unrolled parchment and I called to them. Professor Brandon looked up.

"Hello, gentlemen," he said: "I thought you changed your minds about coming."

"Not at all, Dr. Brandon," Dr. Dennison replied: "We had a little difficulty getting here. Sorry we are late. Have any success, Dr. Farrington?"

"Did he!" Professor Brandon put in before Dr. Farrington could speak. "He found his missing element! In fact he found the drug complete! Be careful of that little plant there! Rankin, you stand guard over it and bounce anyone who goes near enough to injure it!"

"Congratulations, Dr. Farrington!" Valeri said, reaching out a hand which Dr. Farrington took in a tight grip: "Now we'll learn something about the nativity of those poor devils up there in the containers! They've slept long enough, don't you think?"

"Well it wouldn't hurt them to sleep longer, Valeri," Dr. Farrington said with a grin. "It's certain that most of them will!"

"How's that?" asked Valeri.

"Well, I don't think we'll have sufficient antitoxin to revive 'em all. I could not hope to obtain more than a few drams from that plant."

"Too bad!" Dr. Dennison said, stroking his chin: "I had hopes of animating them all. What are you reading, Brandon?"

"That's what I'm trying to figure out, Dennison!" Professor Brandon answered. "Here you take a look at this thing and see what you can make of it. Looks like a bunch of meaningless circles to me and I don't understand their hieroglyphics. It's a puzzle. Young Rankin discovered it in this cylinder. It might be interesting."

"I've been studying their hieroglyphics," Dr. Dennison said, reaching for the curling parchment. "I might be able to decipher some of them."

Immediately Dr. Dennison sat down with a pencil in his hand and bent over the parchment spread out on my knees. Dr. Farrington walked over to where I stood guard over the plant and gazed down at it longingly. Dr. Valeri and Professor Brandon followed him and stood by his side as he explained briefly how it came to exist.

"You expect to crush the plant and use its matter to counteract the drug, is that it, Dr. Farrington?" Dr. Valeri inquired. "There will not be enough matter in that to animate more than one or two Stellarites, will there?"

"Hardly, Valeri," he replied, his eyes softening.

I had a feeling that Valeri was not acquainted with the facts surrounding Thompson Farrington. And I was certain that, if the plant contained any life-giving drug at all, it would not be wasted on the grotesque Stellarites!

Dr. Dennison suddenly leaped to his feet, the curling parchment rattling in his shaking hands.

"My God!" he groaned, "Those devils meant to capture our earth!"

"You're dreaming, Dennison," Professor Brandon said with a laugh: "How could a few miserable big heads capture such a mammoth thing as this globe?

You must be crazy!"

"Crazy, hell!" he shouted, heatedly. "Those Stellarites came here expressly to make this world their own! Come here and I'll prove it by their own hands!"

Forgetting momentarily my orders to stand watch over the Radium Weed, I dashed with the others to Dr. Dennison's side. His hands shook nervously as he stretched out the parchment for us to see. With a pencil he traced the circular lines that had been meaningless to Professor Brandon.

"See these circles, gentlemen?" Dr. Dennison said, excitedly. "These circles, with our globe in the center, represent Jupiter, Venus, Mars, the Sun, the Moon and other heavenly bodies surrounding us. Here is the outline of the North American continent on the center circle, which is represented as our globe. Thank God the ship was destroyed!"

Dr. Dennison paused for a second. The others, apparently too stupefied to speak, stared at the parchment silently, while he studied the hieroglyphics. Presently he continued.

"From their own writing, gentlemen," he said suddenly. "I take it that with one of their methods, presumably a ray of some sort, they were to systematically clear off the earth all human beings. They explain here how it was to be done! They planned to use also a stream of some gaseous substance to be shot at our cities to cause a terrific combustion."

"Then that accounts for the strong odor of sulphuric gas in this ship, Dennison?" asked Dr. Valeri, intently, his face pale.

"It does, Valeri!" returned the famous head of the Ritchey Observatory. "We've searched this mass from top to bottom but could not find the source of that nauseating odor; although there are fragments of machinery and chemical apparatus here that might have been used to manufacture the gas."

"But why would they want to capture our earth, Dr. Dennison?" I asked, shaking. "Why should they go to all that trouble?"

"Yes, Dennison," put in Dr. Valeri. "Why would they want to kill us off? Why do you think they chose this area for their field of operation?"

CHAPTER V

A Terrible Story

"I WAS coming to that," Dr. Dennison replied, studying the parchment. "Here, look at the arrangements of these circles. Here is the earth in the center. The sun is seen shining over the earth, and away down here under our globe is another planet that seems to be dark under the shadow of the earth. That is the planet of the Stellarites! As far as I know it has never been accounted for—I have never seen it before, probably because it does not glow like other planets. It is a planet unknown to astronomical science. But at any rate, it appears as though their globe did not receive its share of sunlight. Possibly life was dying off, unable to combat the growing cold. Consequently they wanted a new world with plenty of sunlight and warmth. I can see no other reason for their desire to destroy us and under circumstances surrounding them they had cause for wanting our globe for their habitation. Their planet must have been in total darkness at all times and the Stellarites were forced to use artificial lighting and warmth. The fact that they had light of some sort is proven by the existence of eyes in the Stellarites' heads. Had they no organs for sight and vision then they would not have cared for the sun's light and would not therefore have envied our favorable position in the heavens. Environment itself would then have created the Stellarites without organs for vision; and the fact that they have eyes is a phenomenon that is beyond our power of understanding. Without light of a sort they would have been as eyeless and blind as bats. They may have been exposed to a slight portion of the sun, but they wanted it all for lighting and warmth if for no other reason! And they came here bent on removing us as the masters and substituting themselves.

"It is my opinion that when the interplanetary ship set out for this globe the ship's pilots must have underestimated the gravitational pull of the earth, or something went wrong with its gravity nullifying system—if they had such a system for rising and landing—and crashed, killing the animated Stellarites and even some of the unconscious ones.

"I believe that the dark planet sent only one ship, confident that it could conquer the globe without aid from others. When this terrestrial visitor failed to return to its home planet, the Stellarite scientists must have given up hope, and the Stellarites contented themselves with what they had, until such a time when they could actually succeed without disastrous results to their emissaries. This twisted mass of metals and mechanism is the only such thing ever found on this globe; and, to me, that proves that no other ships were dispatched here since this one departed. Yet it has an ominous meaning—a meaning that will cause this world to be on constant lookout for more such Stellarite ships of destruction. It means that a ceaseless vigil must be maintained by our astronomers—watching the heavens tensely, fearful lest another ship drop down to place its charge of destruction on us."

"My God!" groaned Dr. Farrington, aloud, his face suddenly white: "And here I've been, all these months, trying to save those grimy devils! And I endangered the life of my dear——. Oh, well, gentlemen, it's a certainty that they'll never have a chance to destroy our race! Others may attempt it but, so far as this world is concerned, the suspended Stellarites will never be revived! They will remain forever in the eternal sleep of doom, the sleep of suspended animation! They can never be revived because this world does not contain sufficient antitoxin to animate more than one—and that one is human!"

Needless for me to dwell on the uneventful return flight from Arizona to New York. During the few short hours, between the two localities, Dr. Farrington sat quiet and held a shining cylinder clasped tightly in his hands. The cylinder contained the

Radium Weed and Dr. Farrington was not taking any chance on its getting away from him. Few words were spoken between us, and the cabin of the plane was silent except for the steady, rhythmic throb of its screws. Professors Brandon, Valeri and Dennison remained at Meteor Crater to supervise some work that was to be done. Often I shot glances at Dr. Farrington, hoping that he would converse with me, but he remained silent, lost in thoughts of his own.

Eventually I entered the observation cabin of the plane and sat down before a compact radio-television set and twisted the dials. Presently the screen glowed with the familiar features of my father sitting at his paper-littered desk in his private office just off the editorial rooms of the *Bulletin*.

"Oh, hello, son!" he said, picking up a handy speaking tube: "Where are you?"

"Just coming into New York, dad," I said, glancing out of the cabin window and seeing the dim outlines of the Gotham skyscrapers: "Ought to be with you in an hour or so."

"What's the news? Got any?" his stern voice reached me, his face glowing in the screen.

"Have I?" I said eagerly. "I've enough good news to fill a book! Your *Bulletin* isn't big enough to hold it all! I'll bet the *Chronicle* would pay ten thousand for it!"

"You bet what?" his voice raved: "Why damn you, if you go near that yellow journal I'll skin you! Ten thousand? I'll give you fifty thousand!"

"That sounds interesting, dad," I said, suppressing a laugh: "But I can't be bought with money. I really don't need it, because you're going to start raving one of these days, like you are now, and Old Man Apoplexy is going to get you and I'll own a newspaper, a couple of buildings and what not."

"Well, you stay away from that *Chronicle*," he said, calming, "or I'll disinherit you! Tell that old fool of a Dr. Farrington that if he ever tries another trick on Tom, I'll roast him to hades!"

The television screen went blank as he turned his attention to other matters. I shut off the current and returned to the main cabin.

"Well, Dr. Farrington," I said shyly, "we'll be home in a jiffy. I'm mighty glad that you found your antitoxin. I'm anxious to speak with Tom to find out his reaction to the drug."

"You better come along with me then, Rankin," he replied, his eyes glistening wet: "If Tom revives I want to give you that note book in which you recorded my speech at the Scientists' Club. You might want to use it in preparing your scoop. I'd like to see that old bear of a John Rankin give you a better position on his paper."

"That's nice of you, Dr. Farrington," I said appreciatively.

Suddenly the plane dipped down through a bank of clouds and landed at the aerodrome, coming to a halt in front of the passenger station. Dr. Farrington swung down from the cabin and I followed with two luggage bags. We went immediately to a waiting limousine and were driven rapidly through the traffic on the elevated highway to Dr. Farrington's palatial residence. Without delay he threw off his coat and donned a white jacket, nodding for me to follow him to his laboratory. Carefully he carried the metal cylinder in his hands, fondling it affectionately.

We entered the laboratory and Dr. Farrington switched off the brilliant lamps and turned on another that glowed with a pale green hue, dimly lighting the room. I glanced around expecting to see Thompson Farrington's reclining form on one of the tables. Instead my eyes beheld a maze of instruments, some with large, queerly-shaped tubes, others studded with green, red and blue lamps. The room would have done justice to a score of chemists, I thought, as Dr. Farrington twisted the cap from the cylinder and lifted out the glowing Radium Weed. It twitched oddly as he set it down on a bench and began pecking at its clot of roots and damp, pulverized rock with a tweezer-like instrument. The particles fell off under the rapid movements of his adept hands and presently he lifted the plant tenderly and placed it on a thin slab of metal. He pressed a button and the slab glowed for an instant. The plant disappeared, leaving in a slight indentation in the metal an almost invisible dot of liquid.

He lifted the slab carefully to one side, raised a hand and pulled down an odd-looking microscope, so that its glasses were directly over the tiny globule of liquid. He stared through the piece for an instant, then shouted exultingly. I watched in wonder. Quickly he pulled out a small drawer from underneath the bench and selected a tiny injection instrument with a long, scarcely-visible needle at its end. He dipped the point into the dot of liquid and it vanished.

"Now to try it out," he said nervously. He ordered a cat procured and during the next two days the animal lay quietly under the power of the drug to suspend its animation. Finally Dr. Farrington was ready. Dividing the few drops of the counteracting drug he applied the needle filled with one into the animal's brain.

Then followed several more days of painful, tortured waiting for signs of life from the feline. Finally it came and with a bound the animal, after lazily surveying its surroundings for a few minutes, jumped from the table and resumed its normal occupations.

Without an instant's hesitation, Dr. Farrington walked to the other end of the laboratory, and bent over a combination lock. He twisted a dial, then swung open a door, entering. I followed close behind. The room was illuminated with a pale green glow, its walls pure white. Looming dimly in the glow in the far end of the vault-like room, I beheld a rather high table. It ridged in the center and as Dr. Farrington lifted a white sheet from one end of the ridge I had my first sight of Thompson Farrington!

In a stride I reached the scientist's side and stared into the pale features of his son. Pale as it was, his face shone with life, and on his oddly-pink lips hovered a trace of a smile. His black hair was neatly

combed and his cheeks clean-shaven. He looked like one embraced in deep, pleasant slumber.

Dr. Farrington moved his son's head slightly so that the back of it faced him. He lifted the injection instrument with practiced precision and gently pressed the point deep into the nerve system at the base of Tom's brain. I felt a cold shudder surge through me as the needle penetrated to the shoulder of the instrument, but nevertheless I watched the injection of the antitoxin.

With a gentle tug, Dr. Farrington lifted the needle from Tom's motionless form and stepped back, motioning me quietly. I left the room knowing that there were preparations to be made for Thompson's re-entry into the world of the living.

Thirty-eight hours later saw us again in the laboratory. We stood on opposite sides of the still unconscious form. I shot a glance at the aged scientist. His face was twitching queerly and tears trickled down his pale cheeks. I opened my lips to speak but he cautioned me against it and I stared intently at the reclining form.

For what seemed eternal ages, we stood there watching, praying, and suddenly I thought I noticed the flutter of an eyelid. Dr. Farrington caught himself in the act of shouting and clamped a nervous hand over his mouth. He bent closer and held his cheek in front of Tom's lips. From then on Thompson Farrington revived rapidly, and presently he sat erect, rubbing the back of his neck. Dr. Farrington was dancing around the room like one insane. I stood still, too awed to move a muscle. Tom looked at me curiously.

"Why hello there," he said, "I hadn't expected a visitor so early this morning. You caught me napping, all right. I was dead tired. May I ask who you are?"

"Never mind now, Tommy," Dr. Farrington said, "I'll explain later. How do you feel, son?"

"I feel great, dad!" he said, "Why do you ask? Lordy, I must have been sleeping sound. What time is it, dad? Here, take a look at the back of my neck. Feels like a bee stung me!"

Dr. Farrington chafed the back of his son's neck vigorously.

"That feels fine, dad!" he said, smiling. "Say—— how the devil did I happen to go asleep in this vault? I don't remember! I wasn't out with the boys last night, was I? I haven't got a head!"

Dr. Farrington laughed happily. I grinned.

"No, Tom," he said, wrapping an arm around his shoulder. "You weren't out last night. Don't you remember anything? But never mind, it will come to you later. Here's your robe, let's have something to eat. I've some hot broth for you."

"Hot broth for breakfast, dad?" he asked puzzled. "I'm so famished I could eat a whole kitchen, cook and all!"

Thompson Farrington stepped down off the high table on which he had lain for many months in the state of suspended animation, and quickly donned his bathrobe. His knees trembled slightly as his feet touched the floor but that was all. He seemed in the best of health and his muscles played in little ripples across his strong biceps and shoulders as he swung the robe around them.

"Tom," Dr. Farrington said, presently, "this is John Rankin's boy, John. He's been with me in Arizona."

"Glad to meet you, Rankin," he said smiling. "You in Arizona, dad? Why didn't you tell me you were going? You must have made a fast trip!"

"You were sleeping when I left, Tom," his father replied. "I had to fly down there to look over that interplanetary ship.

Back to Life

THOMPSON FARRINGTON, nattily dressed, sat across the room from me at the table in the Farrington dining room and complained of his diet of broth. Dr. Farrington smiled at him and then launched into a detailed account of the happenings during the past weeks. Tom sat astounded when his father told him he had been under the influence of the drug for months, and shook his head dubiously. At his father's instigation he tried hard to remember the day that he had volunteered himself as a subject for his father's experiments. But concentrate as he might, he could not remember a single episode of the tragedy that was forming, when his father prepared him for the experiment. He gave it up with a laugh.

"Well, dad," he said, "I'll have to take your word for it! I can't remember a thing. I thought I felt queer when you brought me out of it; but I've felt queer lots of times after a sound sleep."

"It's a good thing, Tommy," said the doctor, "because the memory of it would not be pleasant."

"Then you've found the drug to revive those Stellarites?" he asked, looking at his father. "When do you plan to bring them out of their suspension?"

"I'm afraid they'll never be revived, Tom," his father said, shaking his head: "You see there is not another drop of that drug in the world, and without it they can never be revived. They will remain in suspended animation until the day of doom. It is their just reward!"

"Yes," I said, lifting my coffee cup, "they are as dead as death itself! They deserve it!"

Tom stared down into an empty bowl, hungrily.

* * *

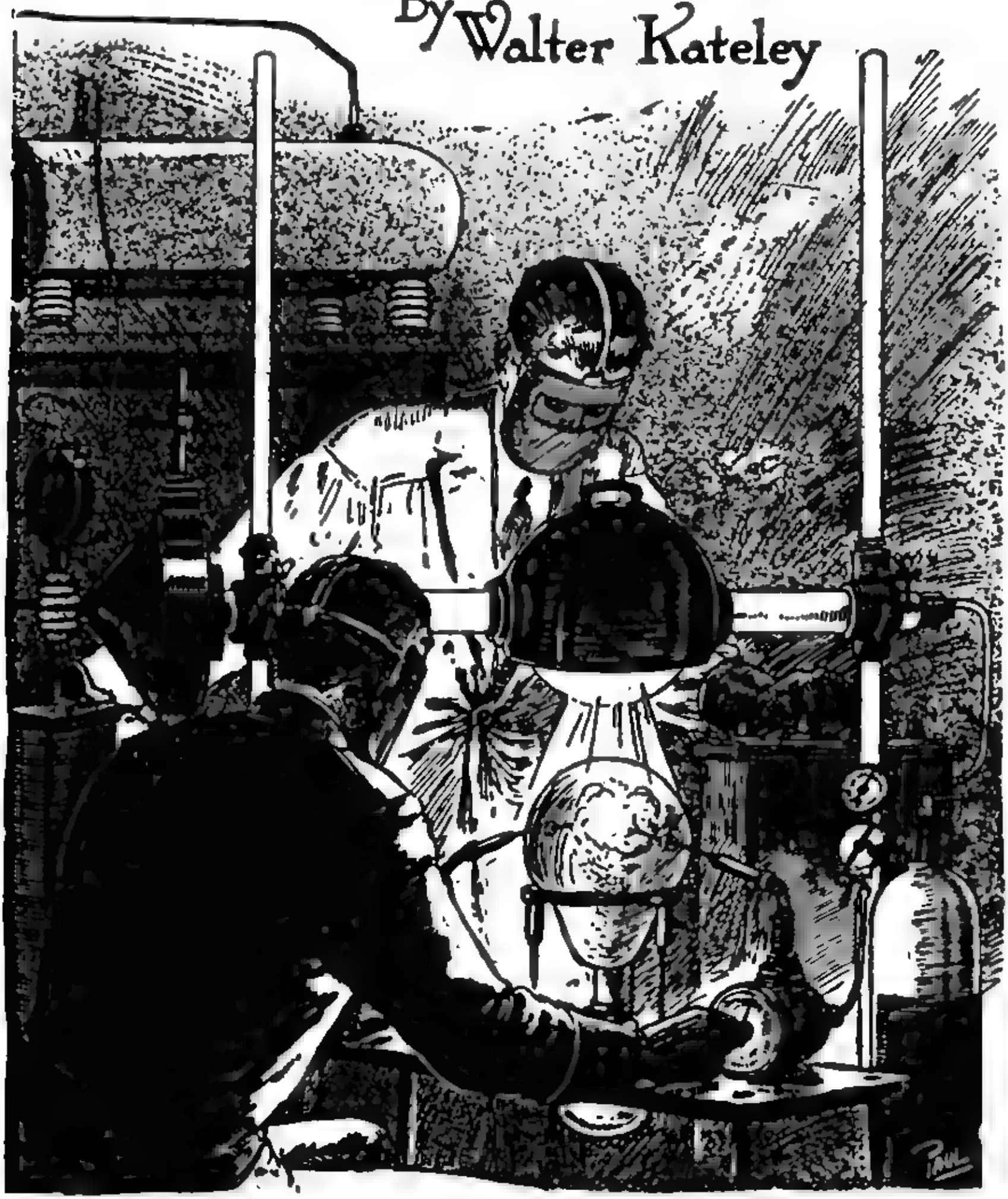
Despite the fact that the *Bulletin* and practically every journal in the world carried detailed accounts of the Stellarites' mission on this globe, few people are aware of the near-tragedy that came well nigh to wrecking the lives of Dr. Miles Farrington and his son, Thompson. While I won a position as star reporter on the *Bulletin*, independently, I hesitated in publishing the speech that Dr. Farrington had made before the gathering in the lounge of the Scientists' Club that fateful evening.

He had given me the notebook containing the shorthand record of that speech and with it went his permission to publish its heart-rending contents. But, somehow, I could not brazenly tell the world about Dr. Farrington's great sacrifice. John Ran-

(*Continued on page* 556)

The GOLD Triumvirate

By Walter Kateley



When our supply of gases was exhausted, we found there was quite a large cooled residue in the bottom of the vacuum tank. This we tested chemically for gold and about the tenth test we obtained what we believed to be a trace of gold.

Illustrations by Paul.

THE GOLD TRIUMVIRATE

By the Author of "From Eros to Earth"

THE traders called it an atoll. The charts called it an island. But the natives called it simply Aluka. And perhaps they were the nearest right.

It was one of those low-lying coral formations in the South Seas, that appear from a distance like a long grove of palm trees growing out of the ocean. A place that had somehow escaped the flood-tides of our modern world.

I had been dropped off the trading boat "Yabonga" in the early morning, to wait for the schooner that was due to touch there some time during the next fortnight; and whose captain had promised to pick me up and take me on to a larger island, some one hundred sixty miles farther South. I had visited this island in former years, the last time ten years ago in 1940, and found it inhabited only by natives and half-breeds.

WALTER KATELY

During the day I had lain quietly in the shade, as becomes any white man in the tropics; but in the cool of the early evening I took my three dimensional camera and went down to the dock, if you could dignify by such a name a row of coral rocks strung out across the sand, and extending a few yards into the water.

There was a queer little old boat tied up to the rocks, that I desired to color-photograph. Or perhaps "desired" is too energetic a word. Suffice it that I had a feeling that if I could reach a position where the light was right, and all things propitious, without too much effort, I would snap it. If not, tomorrow; or another tomorrow.

I had seen the boat at other islands; and had learned from the natives that it was a sea curio collector. And that it made yearly tours from island to island, gathering shells, rare corals, star-fish, etc., to sell at various winter resorts in the turist season.

It was a single-masted sailboat, with an auxiliary engine. It had a beam of perhaps thirty feet, and a carrying capacity of possibly a dozen tons. This ancient craft was manned by a half-breed captain and a crew of three Jamaica negroes.

Whether they were navigating the high seas or lying at anchor in port, they all ate, slept and had their being—or if that is saying too much, at least they ate and slept, on the little deck. For the hold was full of all manner of sea inhabitants, and an odor more powerful than the little gasoline engine that was sandwiched in between the barrels and crates.

Their food consisted mainly of the conchs taken from the shells they cleaned. These they cooked in a kettle over an open fire of drift-wood amidships.

The Captain was possessed of overalls and a coat; the crew were possessed of overalls. The Captain put on his coat when engaged in any business deal, out of deference to the customer; and I feel sure that if he had owned a shirt or shoes, he would have worn them on such occasions. But his feet were so wide and misshapen, from clambering over rough places barefoot, that I cannot imagine what shape of shoe would have fitted him. The boat and crew would have made a picture really worth while.

I had it in mind to buy a pair of conch shells, to "take the cuss off," and then take a snap shot. Yes, it would be necessary to buy at least a pair of conchs. No one in "Conch-land" ever thinks of selling a conch shell alone, any more than they would think of selling you one shoe, or one glove. Down there, it didn't seem to be a matter of sufficient importance that one should inquire why two conch shells should be a unit of merchandise. But since I have returned to a northern climate, where a man's mind is moved to grapple with a thought and go to some pains to gratify his curiosity, I have puzzled over it not a little. But of course, there is no one here that knows.

As I approached the craft, I noticed to my great surprise that there was a white man on board. He was apparently bargaining with the captain for some star-fish. He saw me almost at the same moment, and after taking a good look, to make sure he was not mistaken, came gingerly to meet me. "Well, well," he said as we shook hands, "I didn't suppose there was a white

SOONER or later, gold, as well as all other metals, will be made synthetically. Alchemy is no longer a dream, for already our physicists have succeeded in changing one element into another. Of course, we are still at the threshold of "alchemistry," and it may be centuries before synthetic precious metals can be produced.

Fifty years ago, aluminum sold at a price higher than gold, but today it can be had for about 18 cents a pound. The reason for this is that aluminum is made from clay in connection with an electric furnace. It is, therefore, more or less a synthetically-made metal. Our author shows that having too much gold may become a curse rather than a blessing. Too much of any precious metals will be just as bad as an acute shortage of them—at least, under our present monetary system. And when such a situation occurs, some other standard must be evolved. But this should not be very difficult.

man within seven rows of states. Name is Comstock." Hardly was the introduction over when he asked me if I had seen any recent newspapers. When I replied that I had not seen a paper less than five weeks old, he seemed very much disappointed, grumbling why there was not even a television station in this forsaken place.

We talked a few minutes about the glory of the sunset, the progress of the pearl-fishing and general topics of South Sea life; and then he returned to the subject of newspapers. He inquired with evident eagerness if I thought the schooner which I expected to pick up would possibly have any recent papers aboard.

I didn't regard this as particularly strange, because white men marooned in out-of-the-way corners of the earth often become inordinately hungry for news of the doings of civilization; even though they have become weary of its ceaseless millings, and have departed from it in disgust. I told him that, if not newspapers, they would quite probably have a few copies of fairly recent magazines. "Come up to my hang-out and we will have a little bracer, and I will tell you why I am so interested in newspapers. It is quite a long story," he said.

Comstock's Story

AS near as I can remember, he told it about like this:

I was raised in one of the large towns of Ohio; and after finishing high school in my native town, took a course in chemical engineering at a college in Massachusetts.

It was here that I fell in with two young fellows, both members of my class, and the three of us have been the best of friends ever since.

We worked together in the laboratory, helping one another through qualitative and quantitative analysis; and together we performed a great many experiments, both in and out of our text-books. Soon our friendship was noted among the students, and we became known on the campus as "The Triumvirate." Tom Johnson,—we always called him just "Tom,"—was the most studious, and the most technically-minded of the three. In fact, he did more than his share of the work, and most of the actual experimenting for the trio; and we came to depend on him to help us over any hard place.

The other was Myron Kingsbury. We always addressed him as Kingsbury. It seemed to be such a mouth-filling name, and fitted him so well. He was more of a philosopher than a scientist by nature. And while he was a fairly devoted student, he always had a tendency to drift away from the matter in hand, in order to discuss economics, religion, philosophy or some other topic equally foreign to chemistry. He was a lad of very bland and likeable personality. And while we often deplored his tendency to digress, we always thoroughly enjoyed his little excursions.

None of us were destined to graduate. I dropped out early in the junior year, to accept a temporary position in the patent office; and, at the holiday vacation, Tom decided to join his brother in a little machine-shop business, which he was starting up. And only Kingsbury was left. After we were gone, I suspect that he had little enthusiasm to go on with the course. His father, who was fairly well-to-do, was a director in a small building and loan bank; and through his influence, our friend was offered a position as assistant cashier in the bank. To our surprise, he accepted, and settled down to learn the banking business. In this vocation he was moderately successful, and a few years later became cashier in a down-town bank.

Tom and his brother conducted their shop on a conservative basis for a few years, until they succeeded in perfecting a weed-burning machine, for use on railroad right-of-ways. They became quite prosperous in a small way. Then his brother died, and Tom became sole owner of the business. One day upon my return from a trip abroad, I received a letter from Tom, with an urgent request that I come to see him, saying that he had in mind a very important experiment, and would like to discuss it with me.

So I went at once to see him. I had seen him quite often during the past few years, but had not visited the plant for quite a long time. I was surprised to find that he had a large technical library, an industrial laboratory entirely out of proportion to the size of the plant.

CHAPTER II

Tom Explains

WHEN I remarked about this, Tom replied that he regretted it was necessary to have any plant at all, but one had to make a living somehow.

"This matter that I wrote you about has to do with electrons and protons," he said, "and since they have been your hobby ever since they were old enough to ride, I thought you would be interested."

"Yes," I said "they have given me many a good ride, and I have great expectations for them when they finally get their growth. Tell me all about it."

"Shortly after the war of 1935," he continued, "when copper was so high, we found it economical to use small percentages of gold in the alloys which we employ to face certain parts of our machines which are always exposed to the weather, and so very liable to rust.

"We found that it took such a relatively small quantity of gold to prevent oxidation, that in the long run it was quite a bit cheaper than using copper. Since then we have found a number of economical uses for the metal.

"I have found it very easy to work with the gold, as it enters into combination with other metals and chemicals very readily. And conversely, it is very easy to separate from other substances.

"Recently I have given considerable attention to its atomic structure; and have performed some ex-

periments that have led me to believe that gold can be produced by scientific methods.

"Yes," I said, "the ancient alchemists thought so, too."

"Of course, I expected you would say that," he rejoined, good-naturedly. "You know the human brain is of a somewhat chemical composition, and yours is of course subject to characteristic reaction. But let's see what we really know about gold."

He took from his desk a printed table of the names and numbers of the atomic system.

"Now gold has an atomic number of 79. That means there are 79 more protons (positive electric units) in the nucleus than there are electrons, or negative units." And he drew a hasty diagram of an atom, indicating a group of particles forming a central mass, and a large number of other particles revolving in orbits around this center, as the planets revolve around the sun in the solar system.

"This central group," he went on, "represents the nucleus; which we know is made up of protons and electrons which usually arrange themselves in subgroups of 2 electrons and 4 protons, the electrons being much larger and lighter in mass than the protons.

"In the case of gold, there are probably 39 of these groups of two and four, and one group of two electrons and three protons; while revolving around this central nucleus are 79 electrons, to make up the balance, since in every atom there must be an equal number of protons and electrons. Now it is conceded that every electron is just like every other electron, while the protons are also identical in every detail. And it is also believed that all substances are composed of nothing except protons and electrons, in these little solar-system-like groups.

"So in the last analysis, the only difference in the basic structure of any two substances must be in the different grouping of these same electrons and protons. So if we could take atoms of any substance and pull the protons apart from the electrons, and group them together again in a different ratio of numbers, we could produce entirely different substances."

"That is undoubtedly true," I replied. "If you could add one more proton to the nucleus, and one more electron to the planetary units in an atom of gold, you would have an atom of mercury; and its atomic number would be 80."

"Exactly," said Tom with enthusiasm. "Now then, suppose we take two substances, the sum of whose atomic numbers is equal to that of gold; for instance, iron, 26, and iodine, 53. If we could bring an atom of iodine in contact with one of iron, in such a manner as to cause their two nucleii to merge into one, it is probable that the planetary electrons would automatically arrange themselves in new orbits, conforming to those of gold.

"It has occurred to me that if we should reduce the two substances to a gaseous form by heating, place them under great pressure, and force them through a nozzle at high velocity, we could so direct two jets that they would collide with each other at some rather abrupt angle. Then we might direct a powerful X-ray upon the point of fusion. You know the X-ray has a tendency to loosen the natural bonds between electrons and protons. It might be well to have the fusion take place within a partial vacuum."

"Yes," I agreed, "there seems to be a possibility of success. Anyway, it would do no harm to try."

"I think I could provide all the apparatus necessary for the experiment, except the X-ray," Tom went on; "and if you want to join me, sharing the expense of installing a machine, we will see what we can do."

The Experiment

AFTER some hesitation, I agreed to do this; perhaps more for old friendship's sake than because of any hope of success. That same day we made arrangements to have a large X-ray machine installed. And I agreed to return in two weeks, when we hoped to have all in readiness for the trial.

When I returned at the end of the fortnight, I found that Tom had gone ahead and fitted up all the apparatus for reducing the iron and iodine to gaseous form. He had also made the nozzle in his own shop. These nozzles were so fine that the bore could hardly be seen with the naked eye. We had some little difficulty in arranging them so as to be able to manipulate the jets within the glass vacuum tank. Having overcome this difficulty, we proceeded to test out the X-ray machine and prepare the gases.

These preparations consumed nearly a week; but finally all was in readiness, and while Tom turned on the gases and manipulated the nozzle, I operated the ray. He directed the jets so as to collide with each other at various angles, ranging from 60 deg. to a straight head-on collision.

When our supply of gases was exhausted, we found there was quite a large cooled residue in the bottom of the vacuum tank. This residue we proceeded to test chemically for gold.

At first we were unsuccessful in our search; but at about the tenth test, we obtained what we believed to be a trace of gold. Needless to say, we were highly elated. We were not content to trust entirely to our tests, however; but took samples to an assay laboratory for analysis.

Just at this time I was called away on urgent business, which I felt I had to attend to, in spite of Tom's protests. Tom was now in a state of feverish excitement. The following week I received a letter from him, saying that the assayer had really found traces of gold. And that he was going ahead with further experiments, in an effort to perfect apparatus that would produce the metal in appreciable quantities. He urged me to drop everything and come to help him.

I did not feel justified in being so hasty as that, but I wrote him to carry on, promising to join him

within a few days. When I returned this time I found he had been devoting all his time to the work; and that he was now able to produce the precious metal quite readily. He was jubilant over our success, and assured me that I was now a rich man.

There could be no doubt that the invention possessed possibilities of great wealth. But I felt that the situation needed to be handled with great caution.

After a prolonged conference, we decided that it would not be safe to have our process patented; and we were unable to hit upon any plan of marketing the gold without creating suspicion and endangering our secret.

Since our old friend Kingsbury was in the banking business, we decided that he ought to know all about handling gold; and we agreed that we ought to take him into partnership, thus reuniting the old triumvirate. We both had implicit confidence in his honesty and ability to keep our secret.

It was settled that I should go to see him, tell him of our invention, and invite him to join us in its exploitation. Accordingly, I went next day to the city, sought him out and broke the news to him.

He was naturally somewhat incredulous at first, but I was finally able to convince him that we really could produce gold in large quantities. He finally agreed to ask for a leave of absence at the end of the week, and join us at the factory, saying that he could resign his position at the bank later on, if it seemed advisable.

CHAPTER III

The Triumvirate Formed

WHEN he arrived at the factory, I was unable to be there to meet him; but Tom showed him what we had done, and demonstrated to him that our process was a success. I arrived that evening, and we all went into conference in the library. Tom was radiant and enthusiastic. He open the discussion.

"Now, with an unlimited supply of gold, we can buy everything in the world; all the goods, all the land,—in fact, everything that money can buy," he said.

"I really hope you will be able to buy everything you want, and surely with proper caution you ought to be able to supply all your needs," said Kingsbury, reflectively. "Caution! What do you mean, caution?" Tom exclaimed. "Isn't gold the universal standard of value? Isn't it just like money? Doesn't the dream we have been planning, mean that we can buy goods for all our gold? Think what a boon this will be to humanity! Plenty of gold, gold enough for everybody!"

"Have you ever thought what sacrifices men have made; what immeasurable suffering they have endured, to find the gold we now have? They died by the hundreds; yes, by the thousands, in the Great American Desert and on the plains, during the great gold rush of a hundred years ago in 1849.

"As many more died of frost, privation and exposure in the Arctic regions of the Klondike. And think of the lives that have been sacrificed for the precious metal in the Transvaal!

"Yes," continued Kingsbury soberly. "Gold is a dangerous thing, and must be dealt with cautiously. It has, indeed, taken a great many lives. But have you ever stopped to consider why gold is so valuable? Its uses are very limited. Maybe one per cent is used for dentistry, and perhaps two per cent for jewelry and ornamentation of various kinds. That leaves 97 per cent of the world's supply to be used as money. Perhaps thirty per cent is coined, and the rest, in the form of bullion, lies in the various treasuries of the world.

"Just for the sake of illustration, let us say that 20 per cent of the coined gold is in circulation; or, say, five per cent of the whole available supply of gold is being used in barter and exchange. There is probably not even that much in proportion, in circulation in this country. I will venture to say you haven't had a piece of gold money in the last year. We do all our business with paper money and small change coined from metals other than gold. We say that the paper is just as good as the gold, because gold is in the treasury behind it.

"Yet we all know that there is four or five times as much money in circulation as there is gold in existence; and if one would count checks, stocks, bonds and other forms of collateral as money, there is some 27 times as much money in this country as there is gold, and even more in some foreign countries.

"But the people think the Government is back of all this money, with its taxing power. And for purposes of revenue, all property belongs to the government. So, you see, it is for the most part not the value of the gold, but the faith of the people in the stability of the government, that is the foundation of all monetary values."

"Yes, I suppose that is so," said Tom. "However, that doesn't destroy the value of gold."

"The real function of gold," continued Kingsbury, "is to serve as a unit of value. The abundance or scarcity of the metal determines, to some extent at least, its relative value. Since the discoveries of large deposits of gold during the last century, and coincident with the improved methods of mining, the value of gold has steadily depreciated. That is to say, the amount of goods that an ounce of gold would buy has steadily decreased. You both remember during the 'thirties' when we were boys, a gold dollar would buy about three times as much as it will today; yet there is the same amount of gold in a dollar now that there was then. You know that for a great many centuries silver was the chief standard of value in coinage; but it finally became so plentiful that it had to be discarded. And if gold should become too plentiful, it, too,

would have to be discarded in favor of some less abundant and more stable commodity. It is something like horseshoes. If you find one by the road, it is a good omen; but a pile of them in a dealer's yard is only junk.

"Now look at it from another point of view. Suppose an earthquake should raise an island above the surface of the ocean, in some very accessible locality; say just off the coast of Florida; and upon investigation it should be found that the entire island was composed of almost pure gold, in a natural state.

"All the ships of the world would hasten to take it away. People would fall over one another to get at it. And when all the ships got back to port, laden with the stuff, how much do you think it would be worth? Do you suppose the government would pay money for it? How much would their money be worth?

"Suppose you had a few thousand dollars in cash on hand, and you knew the ships were on the way home, laden with practically unlimited quantities of the new gold. You would naturally take your money and go out to buy something with it, while it still had purchasing power; goods, real estate, diamonds; anything of stable value.

"But the people you would buy of, would know why you wanted to buy; and they would put the price up accordingly; and your money would buy very little. And as the gold approached the market, your money would buy less and less; until at length it would have little appreciable value.

"Now you can see what a dangerous position we are in. We have virtually an island of gold, a potentially unlimited supply. So we must exercise great care, or we will kill the goose that lays the golden eggs."

Danger Ahead

TOM was visibly crestfallen. When he spoke, his enthusiasm seemed very much dampened.

"Then you think that the hardships and suffering that gold miners and gold seekers have so long endured, were practically wasted?"

"Yes; I think it was practically wasted," affirmed Kingsbury. "A sacrifice to human ignorance. The world would be just as wealthy if there were only half as much gold bullion lying in the vaults because it would be twice as valuable per ounce or pound, since its industrial value is negligible."

"Then you think our work in this connection has been all wasted energy?" Tom asked timidly. "That our great discovery, the dream of chemists and scientists of all ages, is of no value to the world?"

Kingsbury meditated a moment. "Yes, I am sure it is of no real value to society. In fact, it is a positive menace to the public. That the public may be kept in ignorance of this, is our only safeguard."

Tom looked long and searchingly at the pattern in the rug. "Well, I will be bum-squizzled!" he finally ejaculated; and then pulling himself together with a visible effort, he proceeded to search for the flaw we both felt must be somewhere in the argument.

"Well," he said, "if the value of all this gold is only fictitious or psychological, why not squelch the delusion at once? The truth, they say, never harmed anybody. So what harm could it do to destroy values that never really existed, except in the minds of the ignorant?"

"I don't know about that. That is rather a hasty conclusion," replied Kingsbury. "Suppose, for instance, that you should discover that the entire Christian religion was a fallacy—as, of course, it is not," he hastened to add in a reassuring tone. "But just suppose it was, and you should discover the facts and come into possession of incontrovertible proof that it was all a great hoax, imposed upon the people a long time ago by a gang of practical jokers. What would you do? Now think it over well before you answer. What would you do?"

Tom thought it over a moment, and then, somewhat dubiously, "Well, that would be a pretty big order. I would have to give that quite some thought."

"Yes, that would be quite a large order," agreed Kingsbury. "You see, it wouldn't be quite the thing to snatch an old lady's faith away from her; a faith that had sustained her through the pain, sorrows and vicissitudes of a long life. You wouldn't leave her stranded, with nothing to cling to in her old age?

"It would hardly be humane to jerk the Church out from under the old pastors and priests, who have given the best years of their lives to its service, and who are depending upon it to support them in their declining years.

"It would be a great loss if all the beautiful and artistic churches that have been built at so much sacrifice and with so much devotion, should be relegated to commercial and utilitarian purposes. Few, if any, could be benefitted if the whole religious structure should come tumbling down, like an empty structure of cards.

"You would probably say to yourself, well, what matter if it is all a fallacy? Hasn't it worked successfully through all these years? Hasn't it been a very definite aid to the advance of civilization; a solace to the oppressed; a gleam of hope to the hopeless? And hasn't it made for morality, social uplift and human progress?

"Although you might not feel like remaining silent, and destroying the proofs of its fallacy, still it would be the part of wisdom and common humanity to reveal the truth only to those who might be in some measure prepared or it and if possible, to offer a truer and better religion in its place.

"When all is said and done, you cannot withdraw any human institution suddenly, without causing a great deal of disorganization and hardship.

"Now, to return to the money proposition. Although the gold is of little intrinsic value, still the

system as it now stands has worked well for a great many years, and could reasonably be expected to function for a long time to come. Although the actual gold in such quantities is not necessary, still it does little harm to have it in the vaults, and withdrawn from commercial uses; because it has so few uses industrially and enough is available at not too exorbitant prices for use where other metals cannot be substituted.

"Of course it is evident to any thinking person," he continued, "that there are other units of value that might easily be substituted for the gold unit. For instance, platinum or some other rare metal might be used; so long as the production of it was fairly stable. It would of course be disadvantageous to adopt any metal as a medium whose withdrawal from commercial uses would work any hardship on industry.

"And there is the unit of value advocated by the socialists; an amount equal to the value of a day's work at some productive employment. Or perhaps better yet, the so-called Fisher dollar; that is, the average value of a stated amount of a hundred or more staple articles of merchandise.

"All these units would of course be subject to price fluctuations, as at present. But I dare say enough of them could be made to serve fully as well as our present gold standard. However, any sudden transition would, of course, be fraught with probability of financial chaos, commercial stagnation, and universal bankruptcy."

CHAPTER IV

The Universal Gold Merchants

TOM gazed steadfastly at the rug, and I stared out of the window, seeing nothing. We knew Kingsbury of old; and while we were impatient to carry on, we knew he must have his little fling.

He ceased speaking, as one who feels he has said all that is necessary, and looked at first one and then the other; but as we did not speak, after a moment he resumed.

"Now the situation with us is this: I say 'us,' since you boys have been good enough to let me in on this. And I want you to know that I appreciate your doing so. And while I am glad to share in the profits that may accrue, I am determined to assume my full share of the work and responsibility. And I only hope the part I play may be such as to justify your faith and liberality in taking me into your confidence."

Tom commenced to perk up, and I withdraw my gaze from the window.

"But as I was saying," he went on, "we are in possession of a great secret, and the public welfare demands that we guard that secret well. We need not let the invention go to waste. If we produce gold gradually, and in moderate quantities, hiding its source, we will be doing a great service to society in shielding it from dire calamity. And our own reward, as is usually the case, will be in exact proportion to our service. The extent of our profits will depend upon the care we take in not upsetting monetary values."

Tom smiled broadly, remarking: "Well, the dear public can depend on me to be at least conservative."

"I can see but one way to produce gold in any considerable quantity without endangering the secret of our process, unless we organize a commercial company, and engage in mining; or at least, buy the output of mines, and become dealers in gold," Kingsbury shook his head soberly.

"We will have to work out some kind of a system for handling large quantities of gold, without creating public suspicion, which, as I say, would be very detrimental to public welfare and to our own prosperity. I think we had better sleep on this proposition, and see if we can't work out some scheme by tomorrow."

So we parted for the night; but it is doubtful if any of us got much sleep. I know I was awake most of the night, devising wild schemes for secrecy; and when I did finally doze off, I kept going over these schemes in my dreams. When we met next morning in Tom's little private office, Kingsbury at least had made some progress, and he proceeded at once to lay his plans before us.

First, he proposed that we install machinery in a corner of the little plant, capable of producing a very limited quantity of gold, and sell the output at a slight discount to the dental and jewelry trade. He suggested that we might announce that we had perfected a new process for refining gold, and that we meant to keep it a trade secret.

He pointed out that after making a few sales, we could enlarge the plant, and go into the market to buy crude or partially refined gold from the mines. This we could bring to the factory and resell, together with our own output. In this way we could render it very difficult for any one to discover that we were actually producing any raw material. This seemed to be a feasible plan, and we agreed to act upon it at once.

We proceeded to organize a company, and applied for a charter under the name of *The Universal Gold Merchants Company*. And under this high-sounding name we sold our first ounce of gold.

We offered our customers a two-year contract at a reduction of two per cent for the prevailing price, in case they took a certain specified amount during the life of the contract; claiming that our newly discovered refining process enabled us to make this cut in prices, and still retain a margin of profit.

The Plan Works

AT this rate we found ready sale for our output, and soon were able to visit the mining regions for the purpose of purchasing raw gold. We took

particular pains to give our activities as much publicity as possible, and bought with a great deal of ostentation.

All this took time however; and it was more than two years after the formal organization of our company that we ventured a shipment to the United States Treasury. We then shipped bullion to Washington, to the amount of one and a half million dollars; and received payment in crisp new gold certificates. Needless to say this transaction was attended with bated breath on our part, and we lost no time in dividing the profits and investing the proceeds in tangible property. For while we knew that a paltry million and a half more dollars in the gold reserve could have no appreciable effect on the money market, yet these funds seemed practically worthless to us until we had turned them into something more substantial.

Because of Kingsbury's evident grasp of the intricacies of high finance, we decided shortly after this to make him business manager; while Tom attended to the production end of the business; and I took to the road as salesman and purchasing agent.

Now things began to move more rapidly. I was soon able to arrange long-time contracts with most of the gold-producing concerns, both at home and abroad, whereby we were to take over their entire output.

Then we hired a force of publicity agents and proceeded to issue great volumes of propaganda, urging a single gold standard in all countries where silver was still used. And in all capitals we organized extensive lobbies to work for the enactment of laws calling for a greatly enlarged gold reserve. One by one, the larger countries passed the necessary laws and we proceeded to fill the resulting demand for the metal. We now took over as many mines as we were able to buy. As fast as we acquired these mines we commenced to pad the records for their output, in order that our great volume of sales might not cause suspicion.

Then we organized a so-called business extension department, and sent a whole army of purchasing agents out to buy land, railroads, and property of every description in widely separated districts. Most of these properties we bought, not as a company, but as individuals. This method possessed two advantages. The profits of the company were not so apparent, and in case of a great suit or any other disaster to the firm, our fortunes would be intact.

We lived in constant fear of a crash, and tried to keep as little money on hand as was consistent with our great volume of business.

We bought steamship lines, reclamation projects, public franchises, timber tracts, city bonds, government islands, anything that was for sale. To handle these, we organized holding companies, so that we might remain somewhat in the background and under cover, while exercising control. Of course as our activities became more extensive and our interests more varied, we were obliged to delegate our powers to agents, hastily selected. Sometimes they were not very efficient, and sometimes not very honest; but on the whole our losses were comparatively few.

Because of our large operations, Kingsbury soon became a central figure in banking circles; and Tom and I noticed that he was taking a keen interest in manipulating large financial deals, and that his chief sport was to juggle the price of stocks and bonds.

Like many another captain of high finance, he came to value his prestige and influence more than his fortune. Under the influence of our buying, many stocks went to unheard-of high levels and remained there. This was very puzzling to financial writers and students of high finance.

Many companies who were not making large profits saw their stock go to new high points, month after month; and the officers wondered why so much confidence was displayed in their earning power.

Some five years after we started production, the market commenced to lag. All the government treasuries had built up huge gold reserves, and of course the demand had commenced to decrease.

CHAPTER V

Discovery and Collapse

IT was then that Kingsbury conceived his ambitious scheme, to induce states, cities and other municipalities to build up a gold reserve in their treasuries, and issue non-interest bearing bonds to pay for public improvements.

We re-organized our publicity department on a larger scale; and inaugurated a propaganda campaign far more ambitious than anything attempted by any organization. Every newspaper and every magazine was pressed into the service; and for three years we hammered at the public mind. Finally we began to get results; and at length legislation was enacted, allowing the states and cities of America and some foreign countries to establish the much-talked-of gold reserve.

Then we proceeded to reap the harvest. We sold fabulous sums of gold, taxing our productive powers to the utmost, which, however, kept us in constant fear that our secret would be detected. Of course the great increase in the amount of gold production was having its effect on commodity prices, and the value of the dollar was rapidly depreciating. This did not worry us, however, because our dollars passed very quickly through our hands. Then one day it all came to an end, as we had known all along it must, sooner or later.

That morning, as I sat down to breakfast, I picked up the morning paper, and there, in staring black head-lines, I saw:—

(*Continued on page* 557)

The SPACE-DWELLERS

by RAYMOND GALLUN

We found the two agonies of this struggle were continually at war. The battle appeared all possibility of description. It was horrible and disgusting beyond words—the spasms of writhing anabolite tentacles woven together.

Illustration by Lehmann

THE SPACE DWELLERS

DOUGLAS BARCLAY had one characteristic for which he was remembered even after his disappearance. When he heard anyone denounce some apparently wild scientific theory or dream as being impossible, he had a habit of smiling a tolerant smile that, nevertheless, seemed to be tinged with a hint of pity or even contempt. All through his short but brilliant career he refused to tie himself down to any fixed standard of distinguishing possible from impossible. His imagination seemed completely elastic. It is partly because of this, that his friends who read the last letter that he wrote, have never ceased to be puzzled. They simply can't believe what he wrote to be true. Yet there is his sudden disappearance—but let's go on with the story.

RAYMOND GALLUN

It all happened on the night of July 17th and the early morning of July 18th 1941, when Hanley's "false comet" approached its closest to the earth. The "false comet" was that queer marauder from outer space that broke all the rules of comets and acted always as though directed by some intelligent entity. It lost speed rapidly as it raced into the solar system, directed its tail straight toward the sun, and neglected entirely to swing around that body and to hurtle back from whence it came; instead it defied solar gravitation, held a perfectly straight course and vanished at last at a point among the stars opposite from where it was first seen.

At this time Barclay was working in his laboratory, which was situated on a secluded little island in a small lake of northern Wisconsin. The youthful savant sat before a paper-littered desk in a big-domed workroom, while outside a strong south wind sent moisture - laden thunderclouds racing across the night sky. He was alone with the greatest of his dreams; for it was late and Ching Loo, his Chinese servant, had retired.

Barclay was paying close attention to several dials on the control board of an enigmatic mechanism that buzzed and hummed directly in front of his desk. The machine was his super-press with which he hoped to tap the secret of intra-atomic energy. Since early youth he had felt certain that, if a substance were submitted to some titanic crushing force vastly beyond any yet in use, the well-nigh inexhaustible supply of power stored in the atoms of that substance would become available to mankind.

Suddenly a wicked flash of bluish light shattered the darkness outside the laboratory. Immediately there followed a deafening roar of thunder, then Barclay heard, or thought he heard, an unfamiliar sound, a low droning. However, it may have been just fancy. Through a screen door, which led into a neglected little flower garden, he saw a nebulous patch of bluish radiance beneath the trees. It wavered for an instant like a will-o'-the-wisp buffeted by the wind, and then vanished. The droning too had died out.

With a queer tingling sensation at the nape of his neck, Barclay walked to the door and peered out. He could see nothing but blackness. It was raining violently now. Save for the hiss of falling water and the tapping of the wind-driven waves against the shore, all was silent.

"The sound and the lingering glow must be new and unrecorded phenomena of the lightning," he thought, "I'll make a note of them—a limb off a tree is probably the only damage done."

But somehow he had failed to reassure himself. What if there were something out there? Foolish thought! His nerves had never troubled him that way before.

In a queerly disconnected way Barclay wished that he might see the "comet." Somehow he was morbidly fascinated by its gray ghastliness. Then as though some dark genie were up there to do his bidding, a little patch of cloud rolled back and the visiting orb shone down mistily upon the earth. The cold light revealed the island landscape dimly for a second and then was blotted out. Had Barclay's imagination again played him a trick, or was it true that he had had a fleeting glimpse of something flat and strange out there?

"I guess this big experiment has made you a little unstrung, old boy," he said to himself: "It was just a gro-

OUR astronomers have always speculated as to the possibility of other worlds being inhabited. As a rule they base their assumption upon the facts that life as we know it cannot exist when the temperature falls below a certain degree or rises above a certain point. Having nothing to base their theories on, except what we know of terrestrial animal life, they cannot conceive that, after all, life may be possible at a temperature of absolute zero or even at a temperature above that of boiling water. Naturally, beings that could exist under such conditions would not be constituted in the same way as we are; but that does not preclude the possibility that there are in existence such beings right at this very minute.

As we all know, life is possible under the most adverse conditions and, as a rule, life will adapt itself to its environment. Thus, we have deep-sea fish that live under tons of pressure where scientists, fifty years ago, would have been certain life could not exist.

As we come to know our universe better and better, more surprising facts, such as illustrated by this story, will become known; and the impossible things of today will become the commonplace of tomorrow.

tesque shadow, a fallenlimb or something. When this downpour stops, you'll be able to tell surely."

Barclay returned to his desk. A minute passed, the screen door creaked as though a sudden gust of wind had moved it. It creaked again; but the young scientist did not notice, for he was absorbed with his work. Another minute flitted by, while a feeling of uneasiness that was almost dread crept into Barclay's mind. He turned about; and then there was the strangest meeting in the history of two worlds!

The Strange Visitor

BARCLAY gasped in thunderstricken astonishment. Had too-constant study driven him to madness, or was it true that some mysterious fiend had come to pay him a visit? His first impression of the creature that had entered, was that it was of heroic proportions—fully seven feet tall and black as jet. A fleeting idea that a huge negro, with malicious intent, had invaded his laboratory, quickly left Barclay when he saw the flawless perfection of his visitor's features. Certainly they did not belong to any savage African. Straight black hair, cut square at the shoulder, framed the giant's face; and was held in place by a thin band of platinum, on the forward portion of which a big ruddy jewel gleamed with all the malignant fire of some dying sun. Barclay's visitor wore no clothing save for a breechcloth of some snowy material; fastened to the belt that supported it was a small rectangular case of some greenish material. It bore a circular dial on the circumference of which were engraved many characters. A flexible metallic cord led from it to a sort of holster where reposed a weapon that looked like some quaint form of pistol.

For many seconds Barclay's eyes lingered over the bulging muscles of this splendid being. Finally he managed to gasp: "In God's name, who are you?"

The other smiled slightly and raising his hand he pointed upward. "I am Othaloma of the Stars," he said in perfect English. "I come from the 'comet' which is now crossing your solar system. Truly, Earth Man, I am as surprised at your appearance as you are at mine; for never in all my wandering have I encountered a creature so closely resembling the members of my race. I have visited many planets and many were inhabited by monsters endowed with intelligence; but never was there a single human."

A long moment passed during which Barclay struggled fiercely to collect his wits and to regain his composure. Finally he spoke in a shaky voice: "From the 'comet,' you say, you come? Rot! Since when do they speak such polished English on worlds far removed from the earth? And yet, if you don't come from the 'comet,' where can your home be? I don't know of any place on this planet where they raise your kind."

A tolerant smile crossed the giant's lips. "I, Othaloma, Chief of the Daana, will answer your questions and supply you with adequate proof of all that I say. The fact that I can make use of your language is easy to explain. For ages the people of my race have been developing a peculiar faculty of the mind which enables us, not only to read the thoughts of others, but also to penetrate into their subconscious memory and learn and make use of the impressions stored there. Certain individuals can seal their minds against such intrusion, but this power is developed only with much practice. Since everything you know is as clear to me as an open book, I find it quite simple to choose words from your brain, form them into sentences and express myself intelligently in a tongue of which I have never heard before tonight. Some day the people of this world will doubtless make use of the same power.

"I can see very plainly that you are much puzzled as to my origin. You seem to find it impossible to believe my statement that I am an inhabitant of the 'comet.' I think I can convince you. First of all do you find anything peculiar about the temperature of this room?"

For a moment Barclay took stock of his impressions. Now he realized fully that he felt uncomfortably cold. Perhaps the feeling was the result of the nervous shock occasioned by the arrival of the black man. But no, that could not be; Barclay's breath puffed out in a white cloud just as it would do on a frosty autumn morning. The air in the domed chamber really was cold.

"Now look at me," said Othaloma; "Observe my skin carefully. Do you see anything peculiar about it?"

Barclay obeyed. He saw now that the shoulders of the big black had a glassy smoothness that seemed decidedly unnatural. Little specks of light gleamed from Othaloma's lower torso like tiny jewels—no—like frost particles! It looked as though raindrops had congealed on his ebony hide.

The colossus came forward and held out a hand. "Touch me," he commanded, "but touch me as though you were touching a wire bearing a strong electric current."

Again Barclay did as he was bade. As the tip of his forefinger came in contact with his visitor's palm, an icy chill tingled and vibrated through him. Completely chagrined, he jerked his hand quickly away.

The smile on Othaloma's lips broadened. "The chill of outer space," he said, "permeates my entire body. Where I live the temperature lingers perpetually almost at absolute zero, and there is no air."

"But life cannot possibly exist under such conditions," Barclay exploded, "such a thing is unheard of!"

"Am I not living proof that it does exist under such conditions?" retorted Othaloma: "Besides, is it good sense to say that a thing is impossible merely because it is unheard of?"

Barclay was silent.

Othaloma leaned against the framework of the great press beside which he was standing. His eyes were bent on the floor. Finally he raised his head. "Earth Man," he said, "from afar I sensed the presence of a mind of unusual power upon this island and hither I have come that we might par-

take of each other's knowledge. I have told you I am a creature foreign to your planet and I have offered proofs that have momentarily bewildered you; but, knowing that you are a man capable of grasping great things, I think that if I tell you more you will understand and believe. Therefore with your permission I will relate to you the history of my world and my people. Will you listen?"

"Certainly," returned Barclay, his voice full of eagerness. "There is a chair beside you. Please be seated and make yourself comfortable."

Then the Chief of the Daans, and nomad of the empty abysses between the stars, began the wildest tale that has ever fallen upon human ears.

Othaloma's Tale

"FAR beyond the red sun which you call Antares, and several hundred light years from your earth, is another solar system. In it there spin several planets; of one of these I am a native. It was a fair world once, with green fields and forests upon which the bright sun shone; and there were great oceans—oceans now calm and serene beneath the blue sky and now lashed to white-capped fury by the Storm God. Set along the shores of those seas, nestling amid the verdant plains and snow-crowned mountains, were thriving cities; inhabited by a happy fair-skinned people. All was prosperity and peace; war had been done away with and a spirit of mutual helpfulness had brought them perhaps as near to Utopia as it is possible to get. The climate was delightful and there were plenty of the necessities and luxuries of life for everyone.

"For many thousands of years this golden age endured and then a serious trouble came to vex the minds of the fair-skinned people. Their period of leisure was over. Disquieting signs and warnings began to appear. Gradually, as the milleniums slipped by, the sun changed its hue from yellow to orange and from orange to red—a red that deepened and deepened. Plainly the old luminary was cooling. The climate of the planet was becoming cool, too. Extensive ice caps collected at the poles and lingered far into the summer season and crops were becoming harder to raise. There were other omens. The oceans were shrinking and the air was becoming more and more rarefied through slow but steady leakage into space.

"As generations passed the inhabitants of my native world were forced to desert many of their great cities and rich farm lands upon which the deserts were encroaching—deserts over which icy winds raced bearing with them choking clouds of fine sand.

"During the ages before the beginning of their tribulation, the people of my native world, pronounced Mar-Bilione, in your tongue, had amassed much scientific knowledge. With this they sought to ward off the death of their planet. Drawing water from the polar snowcaps which melted every summer, they made fertile vast tracts of arid land by means of a wonderful system of irrigation. For a time it seemed that the greatest of their troubles was over; but wise minds knew that it was only a reprieve.

"All these things had happened long before my time. When I was born, conditions had become much worse. So thin had the atmosphere become that the sky had no longer the azure hue of former ages; instead, it was a deep blue-black, and in it the stars twinkled even during the day. The water supply had all but vanished. What little was left was kept in underground reservoirs where there was the least chance that more of it could escape.

"The dwindling remnants of the fair-skinned race lived in hothouse cities roofed with domes of quartz glass—marvels of engineering it is true, but still inadequate to ward off permanently the hostile legions of nature. Beneath the domes of these cities the air was kept constantly at a pressure endurable to mankind by means of numerous compressors.

"Within the cities thousands of brilliant minds were at work upon man's supreme problem. One scientist suggested that we migrate to some more hospitable world, but certainly no other world in our solar system would support human life. Another scientist, seeking to replenish both our air and water supply, discovered that it was possible to transmute certain heavier elements into oxygen and hydrogen; but his process was far too slow to be of the least help. Still another savant claimed that he could rejuvenate the dying sun by means of a certain combination of rays; an enormous amount of labor was spent erecting a projector, but his scheme was a complete failure.

"In those years when my father was Emperor of Mar-Bilione and I was still a mere princeling, I took much interest in science. I was under the tutorage of a marvelous old genius named Grooga. In his younger years he must have been handsome but now he was 'Grooga, the Hideous.' During an experiment some hellish chemical had eaten away half his face, including his left eye. Through the gaping red scar his white teeth gleamed horribly. He seemed half demon.

"Together Grooga and I built a space flyer, the first to be constructed upon my world. It was a long, torpedo-shaped craft, fitted with electric gravitational screens and propelled after the fashion of a rocket. The gravitational screens had been invented by Grooga, and I had designed the rocket-motors. Compared to the ships we have now, it was very crude, but it seemed wonderful to us then.

"Early one morning our strange craft arose rapidly from the landing stage just outside the dome of my father's capital city. On our maiden voyage we intended to explore the hundreds of tiny moons that encircled our planet.

"From moon to moon Grooga and I flitted in our interplanetary vessel. There was very little to attract our interest upon most of them, for they were only burnt-out, lifeless cinders.

"Then we came to Goraz, the largest moon—it is about fifteen of your miles in diameter—and there we found a thing of which not even the most imaginative of our theorists had ever dreamed. Earth Man, I doubt if there was one molecule of air or water upon the barren surface of that minute world and night and day the temperature lingered at only

a few degrees above absolute zero, and yet there was life! Earth Man! Do you hear me? Life! And what eerie, horrible things there were—phantoms of madmen's dreams! All were dead black and had many tentacles. They had no fixed form, no definite number of limbs or eyes, such as have creatures of our native worlds.

"They grew as trees grow, haphazard. All were intelligent, they had brains almost equal to ours in power, and yet their mentalities were different in kind. Their main idea was to kill and destroy. As soon as we landed they made a concerted rush for our ship in a shuffling crowd. With high-explosive grenades we destroyed dozens of them, but the others rushed on. One little fellow got hold of me. Ugh! I still shudder at the thought of it! Both Grooga and I were dressed in heavy metal armor, similar to your submarine diving suits, and our faces were covered with our oxygen masks. Had it not been for this protection I am sure the Gorazian would have torn me limb from limb. Spirits of a hundred forefathers—that ghoulish thing was endowed with the strength of ten devils! I cut him in two with my sword and still the halves of him clung to me with a persistence that baffles reason. A blackish liquid dripped from him and when its flow ceased he moved no more.

What Grooga Discovered

"HOW did these bizarre creatures live on this airless, waterless world where the chill of outer space lingered perpetually? For a little while even Grooga was baffled; but few things in the universe could baffle the mind of Grooga for long. Together we captured a specimen of the Gorazian race. First Grooga observed it carefully, and then he killed it and made a chemical analysis of its bodily tissues in the laboratory of our ship. He also examined that tissue under a microscope. Then he made his announcement to me:

"'Prince,' he said, 'we are the discoverers of a form of life that depends upon an entirely unheard-of principle for its existence. All living things must have some source of energy to carry on their bodily processes. In the case of creatures native to our own world, this energy is derived from the chemical combination of various substances with oxygen which enters their bodies through their lungs or other breathing organs. Since there is no air on Goraz, such a supply of power is not available here. Instead, these queer animals get their energy from within the atom by means of radio-active disintegration. It sounds impossible, but it is true. The black liquid that flows in their veins is a very heavy element, even heavier than our heaviest known substance, uranium. Like uranium and radium, it is always producing energy from within itself. It is extremely radio-active, and has an enormous output of atomic energy.

"'On Mar-Bilione the liquid upon which all life depends, is water. The temperature at which living things can exist there ranges, between the freezing and boiling points of water. The radio-active liquid which corresponds to water here on Goraz boils only when subjected to intense heat, and it freezes at absolute zero. Since it is producing heat all the time, it can never become so cold, even on Goraz. That is why these strange creatures can survive the intense cold. I have also found that they can exist at temperatures that would melt iron.'

"Grooga and I spent days wandering over the face of Goraz observing its inhabitants. At first they fought us; but they soon got it through their minds that we were dangerous and better left alone. They seemed to have attained a very considerable measure of civilization. They lived in caves and understood the working of metals. By mixing the radio-active liquid (which has since been named *sata*) with certain other chemicals, they were able to produce an intense heat and with this they smelted copper and gold.

"The principal portion of their food was *sata*. On the under sides of their tentacles were dozens of tiny suckers or mouths and through these the liquid was absorbed directly into their veins. In addition to *sata*, they consumed certain salts and substances rich in silicon to build up their body tissues.

"We found that there were two species of this strange race, inhabiting villages on opposite hemispheres of Goraz. They were continually at war. The motive of each was obviously the extermination of the other. Each longed for complete control of the rapidly dwindling supply of the vitally-important *sata*. Once there had been large lakes of it, but the greater portion had either split up to form simpler elements, or had evaporated into space even as the water of Mar-Bilione had.

"During our first stay on Goraz we saw the large village of Narbool raided (we called it Narbool after the capital of my father's empire). The slight gravitation of the tiny moon, and their great strength, enabled the invading tribes to move very rapidly in great leaps and bounds of over fifty feet. To Grooga and me, hanging above Narbool in our space ship, the *Silver Meteor*, it seemed that they came as suddenly and unexpectedly as a bolt of lightning from a clear sky. And yet the Narboolians were not taken unawares. They had been warned and were ready. In each of the two Gorazian villages there was a slender spire-like watch tower constructed from blue stone, and at its pinnacle a guardian monstrosity stood eternally on the lookout for just such a raid. At times the red rays of the sun glinted on the polished copper tip of his spear, or again the orange glow of Mar-Bilione or the ashy radiance of the hundred hurtling moons would be reflected from his queer, jewel-studded golden armor. He was always there, ready to give the alarm.

"The battle surpassed all possibility of description. If ever there was a combat of ghouls, this was one. It was horrible and disgusting beyond words—the masses of writhing, snake-like tentacles woven inextricably together, the creatures being torn to bits with half their limbs gone, yet fighting on with a vitality that mocks reason. All these things made Grooga and me shudder with revulsion and yet, even as we turned away nauseated at

the sight, our hearts filled with admiration for the inhuman courage of those fiendish things battling beneath us. Their ferocity was awful to see. As soon as a Gorazian was killed, his opponent would suck the life-giving *zata* from his veins and then seek out another victim.

"After about half an hour of struggle the invaders withdrew. Each side had lost about a third of their number. It seemed to us at first that if such battles were frequent, life would soon disappear from the face of Goraz. Such, however, was not the case; the Gorazians reproduce very rapidly and, barring violence, they are immortal.

The Great Transformation

"I DO not know exactly when Grooga's great inspiration came to him. However we had been on Goraz for but a period equal to five of your days when he became very taciturn and thoughtful. Though he avoided speech with me as much as possible, he often muttered to himself. Naturally I became suspicious that something important was afoot, but I was intelligent enough not to attempt to induce Grooga to tell me what it was. There was nothing which the scarred old scientist so much detested as to have one, whom he considered a mere stripling, attempt to pry into his thoughts. Consequently there was nothing for me to do but keep quiet and await results.

"The results were not long in forthcoming, but they only served to mystify me the more. One day we returned to Mar-Bilione. With utmost haste Grooga loaded the *Silver Meteor* with numerous small animals and a complicated mass of scientific apparatus. Then we raced back to Goraz.

"And now a faint inkling of what Grooga was attempting, came to me. Together we gathered a quantity of *zata*. First of all, Grooga placed a tiny speck of it in a drop of water containing microorganisms native to Mar-Bilione; plainly he wanted to observe the effect of *zata* upon a form of living tissue with which we were more familiar. All of the infusoria died immediately. Next he injected *zata* into the system of a large insect; it died. How many similar unsuccessful experiments we performed I do not know; and then one day we began to be successful. A particularly hardy animal managed to survive an exceedingly small dose of *zata*. Next day we gave him a slightly larger dose and so on. Meanwhile we treated him with certain rays as yet not fully understood by savants of your earth. Soon startling changes began to take place in him. His skin, which had formerly been pink, became black, with the increasing quantity of the black radioactive chemical in his body. His blood changed from red to purple and from purple to black—pure *zata*. He shunned his food more and more, and at last dispensed with it entirely. Meanwhile his breath grew less and less rapid and then died away to nothing. The energy that was now keeping him alive was the result of the radio-active disintegration of *zata*, rather than the chemical combination of oxygen with food.

"We took frequent tests of the percentage of water in his system. It decreased as the days passed, and eventually dropped to zero. The water had been replaced by *zata*.

"While all these strange things were going on the little animal became more and more active, and its strength was almost unbelievable for so small a creature.

"Though it still kept its Mar-Bilionian form, it was Gorazian in every other way and perfectly capable of existing under the most severe of Gorazian conditions.

"Now that the complete consummation of the greatest accomplishment that he had ever conceived of, was so close at hand, Grooga was elated. However, there were still several things to do, just to clinch his discoveries. To begin with, we treated other animals in just the same way that we had the first. Several died, but the majority survived the transformation. Lastly we set about determining whether Grooga's process would work on a human being. For this experiment we used a slave whom we had brought along. The attempt was successful. The huge servitor who had formerly been white, became an awe-inspiring black genie with perhaps four times the muscular power which he had formerly possessed. He could survive in an airless, heatless void and unless he encountered some violent destructive force like an exploding bomb, or starved for want of *zata*, he was immortal. The impossible had been accomplished!

"As our space ship arose from the scarred and tortured face of dead Goraz, Grooga looked up from the control board in the conning tower and turned toward me. 'Congratulate me, Prince,' he said, 'for I have saved a great race from destruction upon a dying world. I am certain that there is an inexhaustible supply of *zata* far beneath the crust of Mar-Bilione. With it we will transform every man, woman and child even as we have transformed the slave, Zat Agga. Then, let nature try to strangle and freeze our people to death!'

"I wrung Grooga's hand enthusiastically and, according to a custom practiced by members of the royal family when they wish to reward some one who has accomplished important things, I presented him with a priceless old anklet which had been a treasured heirloom of my dynasty.

"The hull of the *Silver Meteor* glowed redly as it streaked through the thin atmosphere of Mar-Bilione. Its immense speed betokened the importance of the news it bore.

"From that night of our return dated the rise of Grooga's greatness. Two hours after our arrival on our home planet, he made a demonstration of his discovery in the throne room of my father's palace before five thousand of the empire's most noted scientists. During that demonstration he reduced the temperature of our transformed slave's body well below zero, deprived him of air and finally gave him an incandescent metal bar to hold. The bar made the slave's bare hands become red-hot, yet he underwent no apparent discomfort.

The Flight

"IT is needless to say that Grooga's idea took Mar-Bilione by storm. By dawn the following day his name was already written indelibly in the records of eternity. He had become the idol of Mar-Bilione. Within a period equal to six of your months we had transformed practically the entire race into black-skinned supermen who could survive nature's severest rigors.

"But the first injection of *xuta* killed my aged father and I inherited the empire from him together with all the troubles that go with it.

"Soon Grooga's power grew to such proportions that it began to seriously hamper my control over my realm. Earth Man, I loved Grooga as a brother, but the law is that there can be but one ruler in Mar-Bilione. On a certain dark night, the hideous old savant was torn to fragments by an explosion that wrecked his entire laboratory. Because of some miscarriage of my plans, the blame for his death was immediately fastened on me. The people went mad; they thirsted for my blood and the blood of my few faithful followers.

"For a little while I thought I had a chance against my enemies, for I had just discovered a new ray that released atomic energy in a substance instantly when it touches it. It is needless to say that it was a mighty weapon.

"What is that which I read in your mind, Earth Man? You too have sought the secret of atomic energy? Yes, I see that it is so. Your theory of compression is correct but your method of producing it is crude. My ray creates a powerful attractive force between atoms which draws them closely together, much more rapidly and easily than your press will do.

"I had hoped to keep the principle of my new weapon a secret, but it soon leaked out. Now there was nothing for my minions and me to do but flee. The only places where we could have even temporary safety were the moons. Our battle-craft were all fitted for interplanetary travel and so it took only a short time to reach our new homes. Life should have been easy there, for we had all we needed; *xuta* was plentiful in the centers of several moons. However, the enraged Groogans, bent on our extermination, pursued us. Where could we go now? With atomic energy at our command the answer was almost easy. All about us was the sable sky flashing with icy stars—myriad legions of them stretching into the endless vastness of the universe. They beckoned to us—beckoned to that burning spirit of adventure that is ever the possession of a strong, virile race. Could we resist this chance to explore and learn? No!

"On each moon we built an immense driving mechanism, of the same type used in our space ships. Then, one day, the tiny satellites tore loose from their orbits and, after joining into a cluster, began to rush with almost the speed of light out into interstellar space. Behind us always there trailed a long train of faintly-luminous gases ejected from the propelling machinery. That glowing appendage gives the swarm of moonlets the appearance of a true comet, and there is little wonder that your savants mistook it for such.

"Thus we became the Daans or Nomads. For more than a million of your years we have been racing madly toward nowhere, visiting worlds, experimenting and amassing knowledge. To what ultimate purpose is it all? Though I am perhaps older than your first human ancestor, I am no nearer to the answer of that question than you.

"I think I have told you about all there is to tell, Earth Man. Now I must hurry home. Already I have stayed longer than I had planned; as it is, it will take me nearly two hours to reach the 'comet.' In departing, I wish to say that this little time spent with you has been most pleasant. Your mind, which I have rummaged over thoroughly, is filled with so many quaint and interesting ideas!"

By this time Barclay had rid himself of much of his bewilderment. After all Othaloma and his story, though surely fantastic, were not impossibilities. The young scientist's mind was functioning clearly again and he was not slow to see that he might win knowledge from Othaloma that would enable him to make of some of his fondest dreams, realities.

"Though the things you have told me amaze me immensely," he said, "I too have enjoyed your visit. But now there is one thing that I wish to ask you. As you know, I have sought the secret of atomic energy for a long time. I have always cherished the idea that with the power of the atom at my command I might be able to construct a space ship and visit other worlds. How is the ray which releases atomic energy produced?"

Othaloma eyed Barclay for a moment. "So you want to see other worlds, do you? Well, if that's the case, I can do more than merely tell you how to release the power of the atom. Why not come with me to the 'comet?' We will treat you with *xuta* and you will become as deathless as any of the Daans. Then indeed you will see the universe. Will you come?"

Barclay felt the color fading from his cheeks. God, what an idea! What an awful and wonderful idea! The universe and practical immortality—thousands of years in which to study and learn! There was nothing to hold him back—no friends, no relatives, only a paltry five hundred thousand dollars' worth of property, and that could go to the state. For a few seconds Barclay felt an icy pang of fear. What if the black giant were leading him off to perform some hellish experiment on him, vivisect him, torture him? But the terror in the savant's heart passed quickly. Seekers after wisdom must take chances. After all death was the worst thing that could happen, and that always happens sooner or later anyway.

And he could leave a message that would stupefy and amaze those dry-as-dust doubters who would try to probe the secret of his disappearance!

"Give me an hour and I will be ready," he said.

Othaloma nodded and withdrew.

For an hour Barclay sat writing and finally with

a smile laid down his pen. We can imagine how in a short time Othaloma reappeared.

"Have you finished?" he would ask.

"Yes, lead on; I'll follow," said Barclay.

"Come then," returned Othaloma. He strode out into the little garden and Barclay, a trifle nervous, followed him closely. It had ceased raining now, and a few stars were trying to peer through the veil of clouds. By the glow from the doorway of the laboratory Barclay saw a flat, oval-shaped machine resting on the ground. On top of it were a seat and several control levers and behind the seat there was an oblong box-like affair of considerable size. Othaloma fumbled with it for an instant and then raised its lid.

"This is my specimen chest," he said. "I use it to transport to the 'comet' the various living creatures which I collect on the planets I visit. Since you are still dependent upon air and warmth for your existence, you'll have to travel in it. It will protect you from interplanetary cold and, since it is air-tight, there will also be enough air inside to sustain you. I will of course reduce you to a state of suspended animation and in that condition you will need very little oxygen."

Barclay raised himself over the side of the coffin-like affair and then lay down in it at full length.

"You'll go to sleep in a minute," said Othaloma, "and, when you awaken a couple of weeks hence, you'll find yourself a full-fledged Daan and an inhabitant of my capital city, Narbool, which is situated on Goraz; goodbye."

He let the lid drop. The lock clicked and Barclay found himself in absolute darkness. He smelled a faint, pungent odor and then lost consciousness.

One minute later a bizarre craft, ejecting a continuous stream of blue flame from its stern, arose from the island. In a few seconds it floated above the billowing field of clouds that shone with a silvery softness beneath the light of the "comet." Then it vanished among the myriad stars.

Today Barclay's big white laboratory is boarded up and deserted, and a solemn-eyed little Chinaman named Ching Loo is still wondering what, really, became of his master.

THE END

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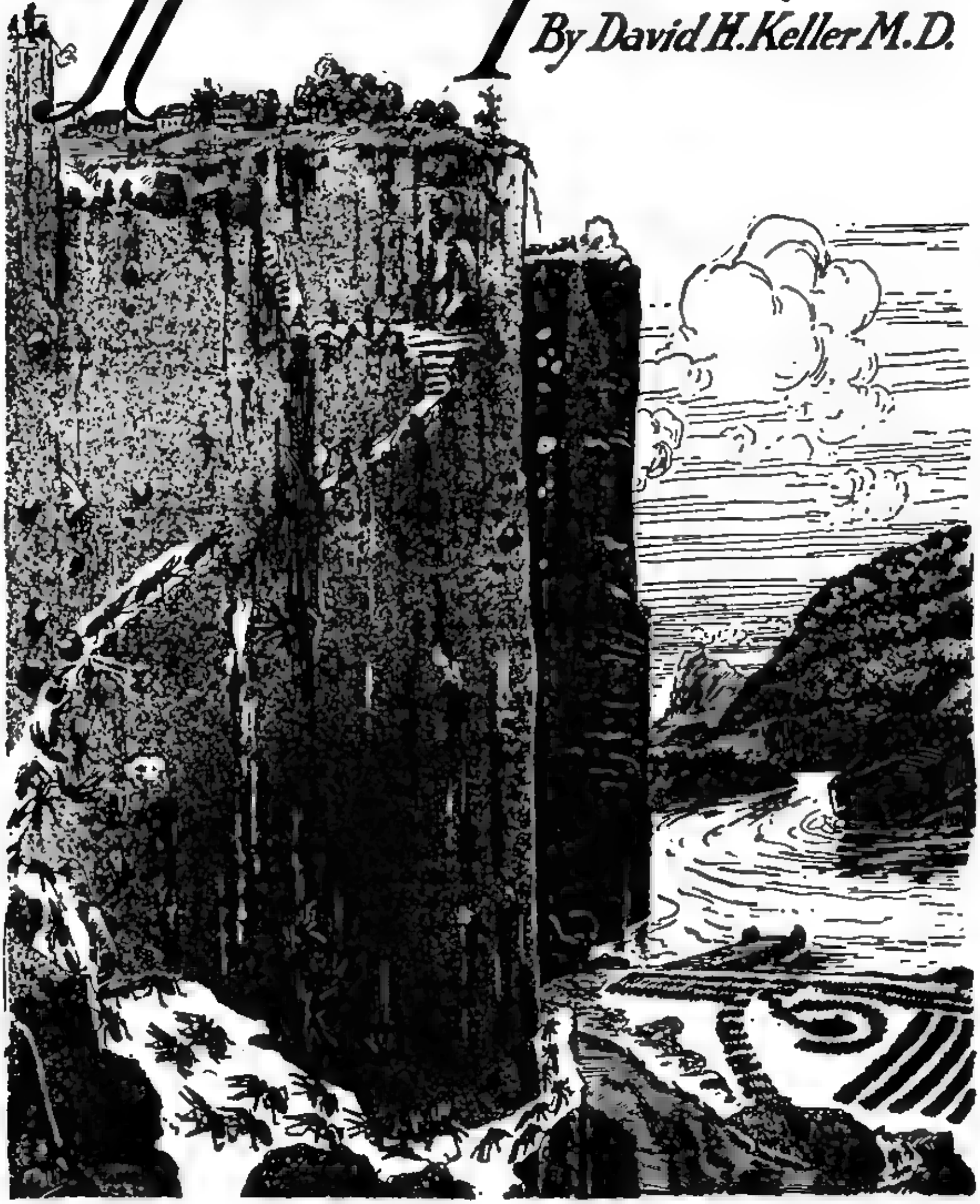
By David H. Keller M.D.



It was only an hour later when the first wave came up the hill. It was slow climbing and often a warrior would fall, crushing a dozen or more in his pathway to the foot. Twenty men and women were slowly picking off the white-headed warriors.

Illustrations by Paul.

THE HUMAN TERMITES

By the Author of

"The Feminine Metamorphosis," "The Boneless Horror," "The Bloodless War"

What Has Gone Before

HANS SOUDERMAN, a scientist who has spent the greater part of his life studying the white ants, or termites, comes to America to enlist aid in a battle against them. He has learned from communication with them that they intend to wipe man from the earth. He enlists the aid of Adam Fry, a young scientist, who in turn enlists Bailey Bankerville, a wealthy banker, and his sister, Susanne. Souderman goes to Canada to await word from Fry. The latter together with Bankerville and his sister outfit a scientific expedition to study the termite. Before they leave they are nearly mobbed under the orders of the "Central Intelligence" of the United States. They reach the coast of an island near Australia, and a number of their expedition and crew who go ashore to study the termites disappear. Susanne, determining to solve the mystery, swims ashore, and is captured by them. She meets the Central Intelligence of the termites who tells her that they have billions of twenty-foot "soldiers" especially bred to fight man. They will conquer the earth and Susanne will be his queen. He proceeds to occupy the brain of a man of the expedition who had been captured. Susanne kills him in the human body, and escapes back to the ship. The crew go ashore to fight the termites, but Bankerville, Susanne and Fry and the ship's captain escape in two planes that they have. They land on the coast of Australia, and learn that the termites have attacked that continent. They pick up a young girl named Anna Ruth, and all four start off by plane to America intending to warn the people of the menace. In the meantime the world has suddenly gone war-mad and dozens of nations are fighting each other.

THEY didn't know it—but even as the coast of Australia faded from their sight so was the human race in that continent passing out of existence. The cables were cut before the attack began. A few messages went through by wireless and then Australia was separated from the world. What happened there during the next few days no one knew because no one survived. Not a ship left the ports. Every airplane was a wreck before the attack began. No one can with certainty say how long it took but it is probable that within a week's time not a man, woman or child was alive on the entire continent. The attack was so swift, the surprise so great that the rest of the world had no real knowledge of what had happened.

And, one island at a time, the same thing happened all over the Pacific Ocean. The hydroplane with the four outcasts beat the Fiji occupation by a day. They secured oil, gas and some provisions and were on their way to Honolulu before the first warriors started to conquer the Fiji Islanders. At Honolulu, Bankerville called on the Governor of the Islands while Fry was working to prepare the plane for the last lap of the trip. The Governor was worried enough without listening to the ravings of an insane man.

"I simply cannot believe you, Mr. Bankerville. I am willing to admit that world politics are in a mess and we are expecting the arrival of a Japanese fleet at any moment. We hope that the Pacific Fleet will be here in time to give them battle. Things are in a mess in Europe and I would not be surprised to hear that the Russian-Chinese-Jap coalition had overrun all of Europe. But when you speak of twenty-foot insects conquering the world, why, that is too much for me to swallow. There simply ain't no such animal, as the farmer said when he saw a picture of a giraffe."

DAVID H. KELLER, M.D.

"All right," said Bankerville, rising to leave. "I have done what I thought was my duty and now I will say goodbye. Just as soon as we refuel we are leaving for San Francisco. Have you heard anything from the southern islands?"

"No, they must have had storms down there. The cables between here and Guam are broken and even the wireless does not work. No one answers our messages."

The worried man rode back to the beach where the plane rested.

"Same old thing," he told Adam. "No one believes me. When it is too late they will remember—and die. Let's start for San Francisco and just as soon as we get there take the express for Vancouver. I want to get out of the tropics as quick as I can. It is fortunate for us that aviation is no longer guesswork. We could not have made this trip ten years ago.

"With the gyroscope and liquid air, airplanes are nearly as foolproof as an automobile. Let's go! I believe that it is only a question of a few days before the Hawaiian Islands will share the fate of all the others of the Pacific groups."

IF you have read the story thus far you must have been impressed with the tremendous underlying idea of this very interesting as well as classic story of science fiction.

But, we dare say, the greatest interest is yet to come; and, while the end may not be as happy as you have, perhaps, imagined, always remember that nature's laws are inexorable and that nature, as a rule, is always cruel as well as inhuman. "Survival of the fittest" is the law which is supreme and which has never been questioned.

At all events, we are certain that you will like the final installment of this tremendous story, particularly when you realize that the author has for good measure thrown in a surprising ending, which is as unexpected as it is logical and scientific.

CHAPTER XII

In San Francisco

THE trip from Honolulu was as uneventful as the rest of the air voyage had been. A few hours

out from the city they passed the Pacific fleet steaming to the defence of the United States' possessions in the West. Bankerville sighed as he saw those mighty battleships, cruisers, and submarines going westward in what seemed an endless line.

"I would have liked to have stayed there," he confessed to Adam. "Those that go through that fight between those sailors and marines and the termites will certainly have something to tell their children. You and Susanne may have more imagination than I have, but I am having a hard time picturing the complete destruction of the human race. I wonder all the time as to whether Susanne really heard that Thing talking to her and actually saw those underground barracks. Did she see and hear those things or was she hallucinating?"

"Anna Ruth says she saw them. How about the man Susanne shot?"

"I know. And we saw some climb aboard the ship. But perhaps they were just a few isolated survivals of antediluvian monsters coming up from some abyss. I cannot believe that there are hundreds of millions of such creatures, specifically bred for the destruction of the world."

"Perhaps not. At any rate I am glad that we are heading for San Francisco. I think that we ought to put the ladies up at a hotel and then we will call at once on the Commanding Officer of the United States Army in that district. I feel that we should place the entire situation before him, and then our responsibility is over."

"How about the Ruling Intelligence of the country——if there is one? Is the army under his control? Suppose he directs our arrest?"

Fry took up the speaking tube and started to talk to Susanne, who, with Anna Ruth, occupied the back seat, while the two men took turns running the machine. Finally he put the mouthpiece down and leaning over said to Bankerville,

"Your sister suggests that she try to communicate with the Ruling Power after she gets to San Francisco. She believes she can get into psychic touch with him at least. If she can she can tell him of the danger his body is in. Perhaps she can induce him to talk the matter over with the other Ruling Powers."

Bankerville never replied. He was not at all sure that Susanne was really sane, at times.

The trip to San Francisco was without accident of any kind. Circling over the city it seemed to all intents and purposes absolutely normal. They landed in an airplane field, and after making provisions for the storing of their plane, motored to a hotel. There they left the two women and started out on their search for news. First Bankerville visited his western fiscal agents. They were more than relieved to see him.

"We did the best we could for your interests, Mr. Bankerville," the president of the bank said. "Business is at a standstill and the only people who seem to know where they are at are the munition and contract builders. The Reserves have been called out, a draft for 5,000,000 soldiers has passed both Houses and is waiting for the President's signature. He is wavering on account of the serious rioting in the larger cities. In some instances the loyalty of the Regular Army has been questioned. We have been in constant communication with your New York house and have taken their advice and turned considerable of your holdings into gold though we had to take over a fifty percent loss in some instances. There has been a good deal of talk about the possibility of the government being overthrown by the Reds financed from Russia and if that happens all property will be confiscated."

"We heard rumors of all this out where we were," said Bankerville. "The way things are going it seems that the loss of my fortune is the smallest part of my troubles. We came here in a hydroplane. I do not suppose it is as large or as comfortable as some I could get here but we are accustomed to it. It is out at the air field. Will you phone out there and tell them to put a force of men to work on it and have it in perfect condition as soon as they can, and get another one. Pack me up sixty thousand dollars in gold and send it out there to be put in the machines. Hire adequate guards. The way things are going I do not think that I want to stay here a minute longer than I have to. We are at the Presidio Hotel. When we leave I will notify you. Send word to my New York house to carry on as usual but not to tell anyone that I am in the States. We registered under other names."

The Bank President was obviously worried.

"Do you know anything about the world situation that is not public property, Mr. Bankerville?"

"At the present I have nothing to say——not even to you," was the curt reply. He walked out to the waiting room where Fry was sitting gloomily looking over the morning papers.

"The more I read the worse I feel," said that individual. "Italy was captured and sacked by the Africans and now the Russians and Japs are trying to drive them out. Ten thousand starving rioters were killed in England and Ireland by the Army. All of England's possessions in Asia are captured by the Chinese troops. Central and South America are helping Mexico mass an army on the borders of the United States. Texas is desperate at the inertia and delays of the government. She has threatened to secede, form the old Texan Empire with New Mexico and Arizona to help her and invade Mexico. There is no news from Japan or any of the Pacific Islands except a radio from the United States fleet that they are assisting in the defence of the Hawaiian Islands—but evidently the radio must have been censored before giving it to the papers because there is not any intimation as to who the fleet is fighting. Are you through with your business? Then let's go and see that General. I am just fidgety—goose-flesh—something is wrong with me. I am not going to feel right till I see Souderman."

An Interview With A Soldier

THE Commanding General of the Pacific Coast Area was a busy man. Had it not been for the industrious wire-pulling of Bankerville's representatives it is doubtful if he could have been seen. As it

was the two visitors were warned by the Adjutant that their time was limited to 10 minutes, and they had better leave then or he would come for them. The multi-millionaire smiled grimly at that kind of talk. If the General did not want to listen to him, he would be through in one or two minutes while if the soldier believed what was told him in the first few minutes he would be glad to spend more than ten minutes. Bankerville wanted to save the people of the United States but he was not going to make a fool out of himself trying to do so.

"General Dorres," he said, "my name is Bankerville and this is my friend Adam Fry, the noted scientist. We have been spending a very hard time out in the Pacific and we feel that you should learn the salient facts of the incidents of the last three weeks. Do you know what has happened in Australia? Do you know what cut the cable off at Guam? Has the Government any idea why there is no news from the Philippines? We can tell you. We think that we know what is happening to the fleet at Honolulu at this very moment. We want to save this city and this nation from the same disaster that has made those Pacific Islands silent tombs. Will you listen to us?"

"What is it?" said General Dorres sharply.

"Giant Termites," answered Bankerville, sharper yet.

"Speak English."

"White Ants—twenty feet long, with jaws five feet long. They have conquered the Pacific and killed and eaten every living being. They cut the cables, destroyed the planes and ships. They are planning to take the whole world as their prey."

"How did you get here?"

"By plane via the Fiji Islands and Honolulu. We started from near Sydney."

"Why didn't you say something in Honolulu?"

"I did. I talked to the Governor the way I am to you. He laughed at me."

The General turned to Adam Fry.

"Mr. Bankerville called you a scientist. Are you?"

"I guess so."

"Were you with Bankerville on this trip?"

"I was. And I personally saw some of the large insects he was talking about. My fiancée killed several of them."

"Where was that?"

"On board our ship in the harbor at Whit Sunday Island in the New Hebrides."

"What is your opinion of them?"

"Practically the same as my friend's. I think they took Australia and I feel sure that their object is to kill and eat every human being on this earth. Our ten minutes are up. Want us to go?"

"Not right away. We have been receiving radio messages in code from the Pacific Fleet. We did not understand their constant reference to insects. They have landed the marines and some of the sailors and are trying to defend Honolulu against some kind of insect. But we had no messages for over six hours."

"Then the fleet is destroyed."

"What by? The Japanese fleet?"

"No. What happened was this. These giant termites came out of the earth and out of the sea. They started in to capture Honolulu. In a short time the city was captured and most of the people left alive were running to the hills for safety. The regular army units were so busy fighting for their lives that they could not offer any adequate defence. Meantime the Pacific fleet landed their Marines. The fighting kept on. The battleships came as near shore as they could and tried to help by shelling masses of the insects. Meantime worker termites, the giant kind, went out and boarded every ship. The crews were killed. When the survivors of the crew took to the boats the giant warrior termites came up and killed them. Continued waves of the warriors continued to attack the fighting forces on shore. Of course millions were killed but that does not mean anything to an attacking force that has literally billions of such twenty-foot fighters. I believe that the Marines died fighting. I also believe that at the present time the termites are systematically combing the island for the last living being. That is my idea of what happened there, and I told the Governor it would happen and he said, 'There ain't no such animal.'"

"I cannot believe it myself. Such a thing never happened before."

"You just think so. For all we know it may have happened a dozen times before. We are going to leave the city. As far as is necessary you know all we do. Our belief is that these termites are not going to stop till they have conquered the world."

"That is what we think," interposed Bankerville. "My idea is that they will attack the United States soon. Probably on the Gulf States, though it may be the attack will come on land via Mexico. You can tell as much or as little of this as you want to. We are going to say good-bye."

"Have you any advice to give?"

"Certainly. Place every fighting man, every male citizen on the fighting line. Provide them with every available means of destruction. Send the women and children up to the mountains. Then wait and pray. If you are able to kill the last insect before the last man is killed you have saved, for the time being, this part of the nation from destruction."

"You talk as though there was a question. You are not a soldier."

"No. I am a banker and this other man, he is a scientist. Good-bye."

"Well, there is another doubting Thomas," said Fry, as they left the building. "I felt for a while that he was going to have us arrested. Let's hurry back to the hotel and start Susanne off on the psychic experiment. I want to get to Souderman. Here in San Francisco we are living on the edge of a volcano."

Susanne's Ruse

AT the hotel they found Anna Ruth crying. Susanne was trying to quiet her.

"The poor little kid fell asleep and she had a dream. She thought that Bailey was being eaten by one of those termites and she couldn't save him. I had a hard time rousing her from the nightmare."

"They haven't got me so far, Anna Ruth," said

the big man, patting her on her head. "So run and wash your face because we are going to have a council of war right away. The General took it mighty seriously, Susanne, but we feel that his general opinion was that Adam and I were liars. We want to start off just as soon as we can on the next trip. We are going by plane instead of train. Now how about this question of communicating with that Central Power? Want to try it?"

"I can try. That Thing in the cave said I could talk to Him if I was sure that I could. He said I could see Him and talk to Him. That Thing talked to me when I was miles away from him so perhaps there is some power like that. Suppose I shut my eyes and try it; just as though it was some kind of television. The Thing in the cave said that all I had to do was to get on the right wave length. Suppose we all sit here and sit quiet and see what I can do."

Meantime Anna Ruth came back, smiling bravely.

"That was silly of me, Mr. Bankerville, but you three have meant so much to me since things began to happen in my life that the thought of one of you being killed was too much for me."

"Now, Anna Ruth, you listen to me," said Fry. "If you had dreamed that I was being killed instead of Mr. Bankerville, would you have screamed?"

"Yes," and the little girl smiled. "But I do not think that I would have screamed quite so loud."

"I thought not. Well, of course I am jealous but I suppose Susanne will do all of my yelling for me if I get in danger."

"I don't yell," said that lady, "I just shoot."

And now came the time for the experiment. It was decided to devote at least an hour to the silent drama, and then go to supper and the theater. "Tomorrow, if the planes are ready we will leave here. The sooner the better," announced Bankerville.

The four sat in the parlor of the hotel suite. Bankerville puffed at a cigar, his feet upon the piano stool. Fry relaxed in a rocking chair. Anna Ruth was comfortable on a davenport while Susanne in a straight backed chair sat at the center of the table, her chin in her cupped hands and her elbows on the table. Minute followed minute, each more silent and oppressive than the other before it. The whole room seemed to be filled with an electrical potentiality that almost snapped in miniature lightning.

Suddenly Susanne collapsed on the table. She breathed heavily as though being throat-grasped by invisible clenching fingers. Fry, who for all his apparent relaxation, had never taken his eyes off her, ran and pulled her from the table.

"Give her some whiskey, Bailey," he ordered. "Let's apply artificial respiration."

In three minutes she was breathing and in three more she was talking though somewhat dazed.

"Got any money in your luggage, Bailey?" she asked.

"Some gold."

"Give it to Adam and let him buy the best high-powered used car he can get. You go down and tell the management that we will be here for a week longer. Tell him our real names. Explain to him that we are going to have supper at the hotel and then go to a show and tell him which show. Go on, give Adam at least five thousand and Adam, you get back here as soon as you can with that car. Telephone to the Aviation field not to hurry with your planes because you won't be leaving here till next week. Telephone the General that you have decided to stay. Telephone to your banker to bring you a million, more or less, in gold, even a hundred thousand will do. Tell him to bring it at once. Get busy. Anna Ruth and I will pack a few things in our bags. We will bring your things. When you get through telephoning go and buy some rifles and revolvers and just loads of ammunition. Bring it back with you so we can put it in the car. Come Ruth, let's pack."

"Will you just say one word of explanation, Sister?" pleaded the anxious man.

"Not now."

The Fugitives

SO they started out and driving, as though the furies of hell were behind them, they finally came to Chilliwack, and registered at a small hotel. Bankerville took Adam to one side.

"Fry," he said, "I don't know how those women stand this. I am pretty well shot to pieces. If I don't get some rest soon, I am going to crack. Suppose we stay here a few days. Do you think it would be safe? And another thing. You and Sis love each other. Why not get married here? Then if anything happens to me you would be in a position to take care of both of the girls. Do you really know where Souderman is?"

"One question at a time. I am in favor of staying here about twenty-four hours. Maybe a little longer. The way things are snapping now, no place is safe except the place Souderman has found. I would be glad to marry your sister but she said flatly that she would not till we got out of this mess. And finally I know where Souderman is. He sent me a full account of it with a map. Now I will ask you a question. Why don't you get married?"

"I would if I could find the right woman."

Returning to Susanne and Anna Ruth they announced that the programme was a good meal and bed for at least twenty hours.

"We will talk about things when we wake up," Bankerville said.

The good dinner and the comfortable beds did the work. The party slept like the seven sleepers of Ephesus till they were called at the end of twenty hours. Once again they gathered for a conference in the hotel parlor.

"Now, Susanne, we are at last ready to hear what happened to you at the hotel in San Francisco," said her brother.

"I have had some experiences," said the young woman: "but that was just about the most thrilling. I tried to follow out the suggestion of the Thing on the island. I closed my eyes and concentrated on the idea of a Central Intelligence which ruled its body, the United States, and all the cells in it, who were the poor helpless people. The Thing told me

that if I thought I could see, I could, and if I thought I could hear I could do that too. So I tried to do it—and suddenly I saw a great cave with a sandy floor and there was something on the floor—like the Thing in the cave on the island; only bigger. I did not want to waste any time, so I projected a thought—I just imagined I was talking and I said, 'Do you realize that your nation, the cells of your body, are in great danger from the Giant Termites? Why not confer with the Things that rule the other nations and try to protect yourself instead of weakening each other by this silly warfare?' And at that the Thing seemed to glow green, and it said, 'Are you a Bankerville?' and I was silly enough to say that I was. Then for a moment I lost the cave and everything and all I could hear was a voice saying over and over again, "Fry, Bankerville and the sister are in San Francisco—arrest them. All officials and policemen and army officers—Fry, Bankerville and his sister are in San Francisco—arrest them." And I cried out, 'You can't do that! All we are trying to do is to save your body—keep you from destruction!' and then I felt myself in the cave again and the Thing on the floor was drawing me closer to it and finally it threw pseudopods of its protoplasm around my throat—and the next thing I knew you were giving me whiskey and artificial respiration. I knew that the only way for us to escape was to think faster than that Thing in the cave and so I gave those orders. What is your opinion of the seance?"

"I think you are wonderful, Miss Bankerville," said Anna Ruth shyly, and in her eyes was the wonder of an admiring worship.

"If the things that happened to you on the island were all true then this thing was true," admitted Adam Fry: "I know that something tried to kill you in San Francisco. We have no way of knowing whether the order was given for our arrest, and the only way we could know that would have been to test it out by remaining. Still, on the whole, I feel that the experiment was worth while and was perhaps the means of saving our lives. I still feel that there is a lot about this psychic life that we do not understand. And there must be a part of this human life, the every-day conduct of the men and women we associate with, that we do not understand. Any way we look at it, we are faced with mystery. All that we are sure of is that we are alive and that there are Giant Termites. How about it, Bankerville?"

Flight Again

"I KNOW one more thing and that is I have a number of additional white hairs since that night you came into my room and hog-tied me. Kind of you to do it though; for I was growing rather stale and since then we surely have lived. Now about that San Francisco affair. I am neither a psychiatrist nor a scientist, but I have read a great deal of every kind of literature. In any logical argument we have to start at some point which everyone will accept. In this special instance the statement we are asked to accept is simply this:

"Souderman claimed that each termitary has a ruling Central Intelligence. He said that he actually talked to one. He came to New York City, an old man, and made a real scientist, but one blessed or cursed with imagination, believe his story. He even taught that man a number of sounds which he claimed is a termite language. Then he became frightened and disappeared. The scientist, Fry, made a banker listen to him and that banker and his sister felt that there was enough in the story to warrant investigation.

"A scientific party was organized and this is what is left of it. Many of the men were killed. My sister spent over thirty hours on that island and when she came back she said many remarkable things. All of her story was a logical elaboration of the original story told by Souderman. If you believe him, you have to believe her. She described certain large insects which she said were crosses between termites and human beings. We finally saw some of these and they were seemingly as she described, but we saw none very plainly. We were working under terrific pressure when we left the ship and, prepared by her story, we might have mistaken the spears and war clubs of over-decorated savages for the long jaws of over-developed termite warriors. We went to Australia and there we have the statement of little Anna Ruth. She was alone with her father and he was so sick that he might have had delusions. There was the man in the automobile that threatened us and he may have been drunk. We made no personal investigation of the conditions at Sydney.

"The next definite fact that we know is that the fleet was fighting at Honolulu and that for some hours their wireless was out of order. They might have been fighting the Japs. It is true that the first messages spoke of insects. Now that is all we know.

"Perhaps every fact could be shown to have a real, scientific, plausible explanation. I mean that Souderman might have hallucinated. Susanne might have fallen asleep on the island and dreamed her story. Her experience in the San Francisco hotel may have been nothing more or less than hysteria. So far we have been retreating from a danger that may be purely imaginary. I do not say that it is, but that it may be. Everyone that we have talked to about it laughs at us. Our minds have been carefully prepared for anything that is weird and occult. Now, I love Susanne just as much as I can and be her brother; but she has done some rather odd things in her lifetime—such as falling in love with Adam and then refusing to marry him—"

"I never did, did I, Adam?" said that woman indignantly.

"No, not exactly. But you did say that we were not to marry till we were out of this trouble and as far as I can see we are just getting deeper into it all the time."

"That is all I have to say about it," ended Bankerville, smilingly: "There are just four of us, and I feel that we ought to go on. If you ladies feel rested let's go on in the car. We ought to be able to do about 400 miles a day and, when we are traveling this way and staying at small hotels, we are not as conspicuous as we would be on a transcontinental train."

Just then there was a knock at the door. Each man grabbed a revolver and put it in his pocket, but there was really no need of them. It was only the landlord of the little hotel:

"Pardon my interrupting you, but I saw a California license on your car and I thought you might like to have the newspaper. Some terrible things are happening down there, and we are all alarmed. And then there is a reward offered for some criminals that got out of San Francisco just before the police nabbed them. The description comes close to your party and some of the amateur detectives in the town are mighty curious to see you. Well, I have been in trouble myself—so I had your car oiled and filled with gas and an extra tire put on behind, so you are ready to travel; but if I were you I would split up. You are too easily identified, two men and two women, and pretty women too. Every village constable will be on the lookout for you. I pushed your car into my garage. I have one just like it and I can fix up a Canadian license for you. You wouldn't care to buy my car, would you? Make it easier for you to travel without being stopped."

"That is mighty nice of you," answered Bankerville: "Where do you come out in the deal?"

"I come out good. My car cost me five thousand, I have driven it just enough to break it in. For your use it ought to be worth six thousand and the gas and oil and extra tires amount to, say one hundred, and your rooms and meals another hundred, and then there is a reward. Ten thousand, if held in jail till identified by the California authorities. I am not going to get the reward, so you should keep that in mind."

"That is fair enough. As I counted it up, about twenty thousand in gold. I will just clinch the bargain by going out to my car and getting it for you. You are more than a landlord, you are really a financier."

"But, brother, you cannot split up the party. We girls don't want to travel alone."

"You are not going to. I have it all arranged. Come on and get the gold, Mr. Shylock. Leave those papers here for the home folks to read," and the two men left the room.

The remaining three turned hastily to the first page of the *Vancouver Herald*. Startling headlines filled the entire front:

"CALIFORNIA CITIES MENACED BY UNHEARD-OF DANGER!!

Thousands Killed.

Frantic Mobs Fill Roads Blocking Auto Traffic.

Oakland and Venice Deserted.

Governor Calls Every Able-Bodied Man to Report for Military Duty.

The *Vancouver Herald* is fortunate in being able to give the first news concerning the terrible calamity in California. Without warning Venice and Oakland were invaded by thousands of gigantic insects that seemed to come from the bathing beaches. Before warning could be given thousands of the population were killed and in many instances eaten. The towns were at once evacuated, the people fleeing to the protection of the cities. Barricades are being erected and every able-bodied man commandeered to aid in their defences. It is impossible at this time to estimate the number killed. So far the attack has been limited to these two cities. Hollywood has been deserted with the exception of a few photographers who hope to obtain pictures of the insects if they leave Venice. Up to the present time these insects have not been classified, or numbered but it is believed that they are not very many."

There were a lot more details, but Fry had read enough to satisfy him that the termites were actually preparing to attack the United States, at least the western coast. On the second page was the offer of rewards for Adam Fry, Bailey Bankerville and two women traveling with them, wanted for conspiracy against the Government and a reward of ten thousand dollars offered for their arrest and detention.

"That looks as though they were after us," he said to Susanne and Anna Ruth: "That partly confirms Susanne's dream or whatever it was. We left California just in time. I think that we are going to be safe here provided the termites keep the government busy enough. They won't have time to worry about us. I wish your brother would come back, Susanne. He does the most inexplicable things. How can he expect you girls to travel in a car by yourselves? I wouldn't have a minute's peace from worry about you and Anna Ruth."

"We would be better off without you men, wouldn't we, Ruth?"

"Perhaps, but it has been comforting to have your brother. He is so strong and capable and always ready to hold my hand when I am tired. I wish that there could be some way of going together."

"Well, there is," said Adam, "so don't worry any more. I will take the gold and some of the baggage in my car and you two women can ride with Bankerville. It will be all right for brother and sister to ride together and Susanne can chaperone you."

Just then the banker came in with a stranger.

"Let me talk to you a minute, Anna Ruth," he said and took her into one of the bedrooms. They came out very soon.

"Now then, folks," said the rich man: "Now then, we are going to get married. Adam and Susanne

are going to marry because they love each other and little Anna Ruth and I are going to have a sort of companionate marriage because it is the best thing for the safety of the party. She is young enough and little enough to be my little girl and, ever since I saw her in Australia, I have wanted to have a little girl like her for a daughter and she says she is willing and here is the preacher. We have no license but he is regular and ordained and is going to give us regular certificates and I am going to build him a new home. So we are satisfied, all five."

"But, Bailey, I haven't any clothes to get married in," objected Susanne.

CHAPTER XIII

The Parting

IT took the preacher only a few minutes to perform the double marriage, a little longer to fill in the certificates, and then he left the room.

"I suppose we all ought to kiss each other now," said Bankerville, "but this is my plan. I am going to give Adam about fifty thousand in gold and tell him and Susanne to beat it and join Souderman. Susanne can furnish him any brains he lacks on the way. My only advice is to look out for the termites and don't stop till you find Souderman. Little Anna Ruth and I are going to drive through to Detroit and then we are going to fly to New York. I do not want to bury myself up north somewhere if there is any chance of the termites or our human enemies attacking New York. I want to see that fight. Then I think that Anna Ruth and I will join you and Souderman and stay there."

"I don't like that plan," said Susanne, now Mrs. Fry.

"It is not so bad," commented her husband: "We will go through to Quebec, spend all the gold you can spare me on a lot of supplies, enough to last several years and then we are going up the St. Lawrence River to the Saguenay River. That is navigable as far north as Chicoutimi. Souderman bought a farm on the bluff over that river, twelve hundred feet above the level of the water. He writes that a few tons of powder will isolate it from everything except an approach from the air. Susanne and I will take our supplies up there, erect some portable houses and prepare for a siege that may last for our lifetime. I have a letter from Souderman telling me exactly how to get there by water. Suppose you copy that letter, Bailey, while I help the girls pack. When you get to New York send us what supplies you can, especially guns and ammunition. When things get too hot for you, fly up and join us. How's that for a plan?"

"I guess it is all right," said Susanne, "but it is going to be hard on Anna Ruth. All alone in New York with no woman to help her shop."

"I don't want to shop," replied the little girl, "I am going to be too busy taking care of Mr. Bankerville."

One hour later the baggage was carried down the back way and put into the two automobiles. The sacks of gold were divided, Bankerville giving most of it to Fry as he expected to obtain more in Detroit. Then with feminine tears and masculine "God-bless-you's" the four started on the next part of their trip; but this time they were to go different ways and a great deal was to happen before they met again.

The quiet of this part of the journey was a great change and relief to Adam Fry and his bride. In fact it was a real honeymoon. Through the Canadian Rockies, past wonders that seemed without end, pausing now and then at a hotel strangely out of place amid mountains of grandeur and lakes of mysterious quiet. Finally they came into Ontario and still later to the Province of Quebec where their auto trip ended at the Chateau Frontenac. During this entire time they had been free from any danger or even annoyance. They had not had even a puncture. At the hotel they found a night letter from Bankerville announcing his safe arrival in New York and stating that everything was normal again; the riots had been checked and the entire nation was preparing for further trouble with the termites who, after making an appearance in California, had suddenly withdrawn without trying to capture any of the larger cities.

"Wouldn't it be strange, Susanne," Adam said to his bride as they read the telegram together, "if that should be the end of it? Suppose we just wake up and say it was all a dream?"

"Not all of it," replied his bride: "Not the getting married part. It has been rather quiet and restful and being alone with you was just like Heaven, but I think we had better go on with our plans. You start out tomorrow and charter a little steamer for the trip and tonight I will help you make a list of supplies. We will have to do that carefully for we may be up there a long time. There are some things that I will want to buy myself so you had better leave me about a thousand dollars or more. We will sell the automobile and go with the supplies on the ship. If you can get a boat we ought to be away from here in a few days."

The next morning Susanne shopped. When she finished she was satisfied and the thousand dollars was spent. Adam put in a very satisfactory day. He was able to report by night that the little steamer was chartered, thirty thousand dollars worth of every kind of supplies put on it, including two small knock-down houses, and that within another day everything would be ready to leave Quebec.

"What did you get, Susanne?" he asked.

"I am not going to tell you. It seems that a married woman has no peace whatever if she has a curious husband."

And that was the end of that.

Promptly with the tide, the little, well-loaded steamer slid from the wharf and out into the main current. It was late autumn and there was a chill on the river that made the two adventurers glad they had on fur coats. It is always a little cold on the St. Lawrence, especially in the morning and evening.

Dusk came and a million stars. Supper for two was served in a little cabin. Fresh salmon was the choice part of this wonderful meal. All through the night they were rocked by the steady chug-chug-chug of the engine and the water breaking around the bow and sides of the ship. When morning came Susanne looked out of a porthole in their cabin and cried to Adam that they were in a canyon. Hastily dressing, they ran up on deck. The steamer was going up the Saguenay between walls of black granite. The water was so deep, the shadows so intense, that the river looked like a black streak of ink. Echoes from the ship's whistle bounded and rebounded against the imprisoning walls. Soon after dinner they came to a wooden image of the Madonna and Child, white against the blue sky and a thousand feet above the river. Fry had a hurried conference with the Captain and fifteen minutes later the ship slowly approached a small wooden dock and after a little trouble tied there. At once the entire crew busied themselves unloading the ship and placing the supplies in secure piles under tarpaulins.

"Where are you going to take these, Mr. Fry?" asked the Captain.

Fry pointed up to the peak, twelve hundred feet above them.

"How are you going to get them there?"

Fry started to think. The Captain did it for him.

"I have a rather good engine in this boat and sometimes we hoist goods with it. I think that we could put some kind of a pulley up there on a crane and pull the goods up by the engine. You'll never get them up by hand."

"What is your time worth?"

"A hundred a day for the ship and twenty-five for me a day and just day wages for the crew—except the officers and engineer and they get their regular wages."

"Go ahead and work it out some way," said Adam. "I have a few thousand left and the things have to go up there."

Souderman Again

WHILE they were talking a small, white-haired man was descending a goat path. He had started when the ship stopped but it took him over half an hour to reach the river. He rushed with enthusiastic joy at Fry.

"My dear boy," he said. "My dear boy! I am so glad you have come. It is certainly lonely here all by myself—and you have come to stay? Must have, with all these supplies. What? Married? That is better yet."

"You don't look a day older than you did in New York," commented the pleased Adam: "Yes, this is my wife. Susanne, this is our friend Souderman, one of the greatest scientists who ever lived or who ever will. He is the man who put the termites on the map. Well, old chap, we have a real story to tell; but first we want to start these things going up to our new home. How is it, cold up there? Captain, you had better go over the geography of this region with the owner, Mr. Souderman. He may give you some ideas as to the best place to put that hoist. If your men do not object I wish they would work extra hours tonight. I want to get the ship unloaded as soon as possible so that everyone can start at the job of hoisting the stuff up on that hill and helping me store it."

Souderman asked the Captain to walk to the end of the dock with him.

"See that black line up against the sky?" he asked. "That is a pine tree that is six foot through at the base. It is the only big tree around here and I have an idea that hundreds of years ago God started it to grow so that we could use it in our hour of need. You put your tackle on one of the lower limbs, and I bet it will hold anything you can hoist."

"How far is it above the river?"

"A little over twelve hundred feet."

"We stop right there. It is a mechanical impossibility with the stuff I have to work with. How did you get your stuff up?"

"I sent out word that there was work here for cash. In no time I had a hundred French Canadians with little pack mules."

"You send for them again. I will unload the ship and go. I want to be accommodating, but I cannot do the impossible."

Souderman called Fry over:

"Got any gold, Adam?"

"Some."

"Well, we are going to carry this stuff up on little mules. The Captain says he cannot do it the way he thought. I will send word out right away. They are all friendly with me around here. If you have gold we will move the goods and move them fast. These people here like the feel of a gold piece."

And that is what finally happened. Every box of supplies, every stick of lumber finally arrived at the top where French Canadians of remarkable efficiency were at once put to work to erect the two houses and to build stone shelters for the bulkier supplies. On the second day the ship left. When everything was done, Adam and Eve-Susanne were living in their own house at what seemed to be the top of the world. The top of the mountain was peculiarly flat for an area of over fifty acres. Then the sides dropped down almost perpendicularly, on the river side over twelve hundred feet and on the shore side from four to eight hundred. There was just one place where a road could wind its way up to the top and that road in one place could be easily shattered to afford complete isolation for those living on the sky top. Years before some introverted Canadian had found the spot, discovered that the land was good, that there was water and privacy; and he had built a massive, low, rambling stone house which contained everything needed for the protection of man and beast. That was the house in which Souderman was living, after he had repaired the roof and replaced a few broken windows. There was pasture for a few cows in summer, enough hay to carry them through the long winter and, what was perhaps best of all, a peculiar out-

cropping of a vein of cannel-coal to take the place of wood.

Souderman took the young married couple over the entire place as soon as they had leisure and the supplies were being safely cared for.

"It is a wonderful place," enthused Susanne, "though a little far from the shops on Fifth Avenue. How did you ever find it?"

"I hunted for it," said the old man, simply: "When I left New York I knew just what I wanted. A cold place that is almost inaccessible to every form of life but especially to those Giant Termites. I am an old man, Mrs. Fry, and the idea of those things catching me and eating me, perhaps before I am dead, was too much for my nervous system. I came up to Quebec intending to go to Greenland; but they told me about this river and the lofty mountains on either side of it and so I came up here. I bought the place for a song from the owner who lives on the river a few miles from here. His wife grew tired of not seeing anyone for months at a time so they abandoned the hill farm. I felt sure that, if Adam lived, he would join me some day and so I wrote to him full directions and my best dreams have come true. In fact more than my dreams have come true, for I never thought of his marrying. He told me that he never intended to."

"He said that because he had never seen me. You must have been very lonely here and I am so glad for your sake that Adam can be with you. I am glad I am with both of you, because I can do a lot to make life bright for you. Have you got a radio? How often do you get the mail? Do you suppose it is cold here in the winter time? Does the wind blow? Are you sure those termites cannot reach here?"

"Well, I have never wintered here, but it is cold enough in summer time to suit me. They say that the river freezes in the fall and does not thaw until April. The first steamers come up through the ice in May as far as Chicoutimi. They stop at my dock if there is freight or passengers. The city is one of ten thousand and is a few hours ride up the river. The three of us will go there some day. You will find it a little like Broadway—just a little. I want to go there soon and buy you and Adam a wedding present. He is just like a son to me so you are my daughter. Come over on the other side of the pasture. The sun is going to set in a little while and I want to show you something."

So they walked through the meadow where several cows and goats were contentedly browsing. Susanne paused now and then to gather wild flowers. Soon they came to the edge of the cliff.

"Now look over that way," said the old man, pointing to the other side of the river. There was the wooden Madonna holding the Child in her arms. At the distance she seemed just a little less than Susanne in size—

"Adam, look. Look! Don't she look a little like our Anna Ruth?"

"A little," answered her husband, smiling at the idea: "Anna Ruth, Souderman, is the companionate wife of Susanne's brother. The four of us were married at the same time. They went to New York and are going to join us later—That reminds me. Have you any distinguishing signal that the pilot of a plane could find this place by?"

"Not at night, but in the daytime it can easily be found. It is perhaps the only landing field for thirty miles. You have no idea how rolling and woody the land is around here. Any aviator flying up the river valley would spot this place as an ideal landing field. Well, the sun is down and it is growing pretty chilly around this promontory. Suppose you come over to the stone house after supper and tell me about the termites. Perhaps we can pick up something on the radio."

Burning Their Bridges

SOUDERMAN, after the young married couple had become settled, had insisted that they have their meals by themselves. He felt that he should not, in any way, interfere with their happiness. So that evening it was nearly eight before they arrived in his sitting-room made comfortable by a coal fire blazing in the fireplace.

"I have just been listening to the radio," said the old scientist: "and they are surely making a mess out of things. Everybody is mad at everybody else and they are killing each other off just as fast as they can. The Russo-Jap-Chinese coalition has conquered all of Europe and is waiting till the time is ripe to sweep over the British Islands. The greatest fleet Great Britain has ever assembled lies waiting for the enemy fleet. If it were not for that fleet the war would be over in a week. To me, sitting here in this quiet room, the entire panorama seems to be an impossible nightmare. What is making it?"

"Well, we thought perhaps the people fought because they could not help it. Susanne, you are a good talker. Tell him about our ideas in regard to a uniform pattern of all life."

So Susanne talked till ten p. m. and then Adam started and talked till one in the morning and, now and then, they drank some wine and smoked one more cigarette; and finally they came to the end of the story.

"I will have to sleep on that before I give any personal opinion," commented Souderman: "As I am the one who started all this it seems appropriate for me to give a final analysis. I am not surprised, Adam, that they thought your wife had hysteria. It certainly was some experience for her. As far as I can see we just have to take her word for it. She is a brave girl. Come and have some breakfast with me at eight. I must get some sleep now."

In spite of all this talk about an eight-o'clock breakfast, Souderman woke Adam at six.

"I just had to wake you, Adam," the old man said: "I started to study over this thing and I do not feel that we are safe. The three of us are the worst enemies that the termites have and I think they will try to get us. I want you to eat a little breakfast and then help me dynamite the road.

There is one place where a few hundred pounds of dynamite will make a gap that even those big crossed-termites might find it hard to cross. It will be an ideal place to defend with your elephant guns. Susanne must be able to handle one and I used to be a fair shot. Ask Susanne if she will help us carry the dynamite—you don't mind my calling her Susanne, do you? Seems to me as though you were all my little children and I am in some way responsible for your safety."

All that day they worked and just at dusk exploded the dynamite. There was no doubt as to their success. The only approach to the mountain top was now by air. The old man was so fatigued by the day's work and excitement that he went to bed as soon as he had supper. The young people talked well into the night. Susanne could not become accustomed to the idea that it was impossible for her to go to town.

"It is just one of those things that will never happen to me, unless brother comes and takes us in his airplane."

However, they finally went to sleep.

After breakfast the next morning they went out for a stroll. It was their habit to take a telescope with them and search the river for boats; this morning, as usual, they turned the glass on their old landing.

Susanne looked long and carefully, and then turned the glass over to Adam. He looked where she pointed. Then he said:

"Let's get Souderman and our express rifles. He wouldn't miss this for anything."

Souderman came as fast as he could. With him came the young folks carrying some guns and ammunition belts. When they came to the side of the cliff overhanging the old landing they gave him the telescope and asked him to give them his opinion. He was in no hurry to do so, but at last he put the glass down and turned to them:

"Those things down there are different from any form of life that has ever existed—at least as far as we know. They look a little like a hypertrophied termite soldier, but no termites ever had faces like these animals. What do you think, Susanne? Are they like those you saw in the barracks on the island?"

"They are enough like them to be them, and the things that climbed up on our ship were the same also. I feel that they developed a pattern and then simply repeated that design all over the world."

"How did they get here? I did not think they could live in that cold water?"

"I'll answer that," said Susanne: "You remember those earthen tubes that they made. The little termites ran some out to our ship and then ate out the bottom and sank it. They have simply run tunnels from the tropics to every part of the world. They knew we were here—at least they knew you were—and they simply ran a tunnel up the river bed and broke it open on the shore near the landing. They are not moving very fast and I should not wonder but that they are cold down there. They do not seem certain what to do next. They must be a long distance from the Guide that gives them orders. That is one reason why the Central Intelligence needed bodies that could keep up with their soldiers. Let me have that glass. Just as I thought. There is something down there like a man, only with a black skin. He is with them. Perhaps that is some poor negro whose brain has been replaced by the Ruling Power of a Giant Termite. See! He is pointing up the path. Perhaps he is giving them orders to come up here and kill us. Let me have that gun. Are these explosive bullets, Adam?"

"Yes, and one of these rifles has a telescope sight."

"You take the telescope and watch that black man. I am going to put a bullet in his head."

"That is a small mark at 1200 feet. Better aim at his body."

"Head or nothing," whispered the girl, as she pulled the trigger.

And she hit. The commanding Thing, whatever it was, spun around and fell off the landing into the water. Susanne put the rifle down.

"Now let's keep quiet and let me try something."

In a few minutes the insect-soldiers, one by one, disappeared down a hole in the sand near the side of the mountain.

"They have decided to go back," exclaimed Souderman.

"No," said the woman; "they cannot decide to do anything. You know that you were the one who told us that they could not initiate thought, only obey commands. So I commanded them to go back and close the hole, and as there was no one else to give them another command they obeyed mine."

"But they will come back again," said Adam.

"Yes, but isn't it interesting to think that they did it?"

"Of course," interposed Souderman very gently. "That all might have been a coincidence—but somehow I think that it was not. I am glad that we blew the path to pieces. Do you think they will be able to jump across?"

"I do not think so. At the same time it might be well for us never to go out without our rifles. I have a few shotguns that shoot buckshot. That might stop a charging soldier better than a rifle bullet. Susanne, we are going to sleep in the stone house with Souderman till we know what is going to happen. I am afraid that they are going to come back."

CHAPTER XIV

With Bankerville

IT was a rather sober trio that walked back to the stone house. Above the sky seemed as brilliantly lighted as ever; the cows were as contented, the goats as lively. But the three human beings were decidedly different. They could not forget that tunnel down at the bottom of the pathway.

Bailey Bankerville travelling with little Anna Ruth went swiftly east over a far different route from the one followed by Adam Fry. He did not

allow his car to saunter along as Fry was having his car do a few hundred miles to the north of him. Instead he drove as if for dear life. Little Anna Ruth just held on tight and hoped that none of the guns were loaded. Occasionally he paused for food, never for sleep. When he reached Detroit, he was utterly tired and his bride more so. He engaged a suite at one of the smaller hotels, registering under an assumed name. Before he allowed himself to sleep, he sent for his business representative in that city.

"Hullo, Jones," he said. "How are things? Do you know if the Government is after me?"

"I do not think so. After the excitement in California they seemed to lose all interest in you. What was the matter?"

"Too much to tell you. You buy me a good two-passenger plane, and put some firearms and about a hundred thousand in gold in it and have it ready for me. Tell the New York office to carry on and, one week from today, phone me on my private line. I am here under another name and I do not want any publicity. How is the stock market?"

"Bad. A person can buy anything he wants for any price."

"You tell the New York office to use their own judgment. Don't forget about the plane. I will want it in about five days. You get it all ready and then come here for me. Any kind will do. I drive them with my eyes shut nowadays."

That was no idle boast, for Bankerville was one of the best amateur pilots.

His business attended to, he wearily shaved and took a bath. Then he fell into bed, and was asleep before he hit the pillow. When he finally woke he did not know where he was. Sitting up in bed he suddenly realized that Anna Ruth was asleep in a Morris chair by the side of his bed. She was all wrapped up in a blanket and had his coat on. She seemed cold and uncomfortable; but there was no doubt about the fact that she was was fast asleep. He carefully took his clothes and went into her room so he could dress without disturbing her. On the chair by her bed were her knickers and worn coat. Bankerville looked at them:

"Poor little kid," he said softly: "From Sydney here she hasn't had a single thing to wear except the clothes she had on the night her father died. We have done everything and we never even thought of her and how she might feel in those old clothes. Let me see. She is about five feet two inches high, and I guess she weighs about a hundred and ten. I am going to get her some clothes right away. She can get a dress when she wakes."

He went to the parlor of the suite and called the hotel manager. As a result the manager's wife herself came to the parlor. Bankerville gave her a thousand dollars and told her to buy an airplane suitcase and fill it full of nice things for his little girl to wear. He explained that she was asleep and he wanted them before she woke.

"If I could see your little girl," the lady said, "I could tell better her size and everything."

"You cannot see her——but——I tell you what I will do. Here are a lot of her old clothes, a pair of shoes, stockings——lots of things I don't know the names of. Take them. Here is another thousand. Buy her a sport dress and a coat to wear in the air and something to wear in the evening at the theater and something else to do her shopping in. Will two thousand be enough? If it is not I will give you some more and I wish you would get something for yourself. Here is a hundred more for you——and please get the things back in as short a time as you can. I will be here waiting for you."

Anna Ruth kept on sleeping. An hour passed and then two and then three. The man sent for breakfast for two, and ate it all himself. At last the lady returned followed by a bellboy carrying bundles and a suitcase.

"Everything is here, Mr. Johnson," she said: "I think that if your daughter is normal she will like the clothes. If they do not fit, they can be changed. Anything else?"

The banker thanked her and carried the things into his little girl's room. He opened the bundles and spread the silkens all over the bed. He opened the suitcase. Then he went back to his room and back to bed. Anna Ruth was still asleep. When he woke again she was gone. He got up and shaved again. Just as he finished she knocked at the door.

"Can I come in?" she called.

And in she came, and when she did Bankerville gasped. He had never realized the change that clothes make in a woman. Anna Ruth in ultra-feminine attire was someone else than Anna Ruth in shabby, faded knickers.

"I wanted to thank you for these clothes, Mr. Bankerville," she said. "They are just too lovely for words to express. Can we have breakfast?"

That is what they did—had breakfast in their suite; and, in spite of his having previously eaten, the dazed man did full justice to another meal. Finally, he said:

"Listen to me, little Anna Ruth. How old are you, anyway?"

"I'll be twenty-two next week."

"And all the time you let us treat you like a little girl. Why didn't you tell us you were a woman?"

"It was this way. I was all broken up over Father and the way things went, and you were so good to me that first night and held my hand so I could go to sleep; that I just thought that perhaps, if you knew how old I was you wouldn't treat me so nice, and I did need someone to love me—so I just went on being your little girl——and then——when I found that I loved you and you said I ought to marry you for the safety of the party, I just had to keep on being your little girl, for you would not want me with you if you knew I was a grown-up woman."

"I just made one mistake, my dear girl," said the man, and his voice trembled as he spoke. "That was in arranging for a companionate marriage with you. I wanted to take care of you just as though

you were a child. But now that you say you love me, and I know I love you, I wish that we had been married——as Susanne and Fry were."

The woman opened her eyes,

"Weren't we? I thought we were. Same words —same preacher—same certificate. Are they married in a different way? Of course you have been worried and you certainly drove like mad, but you are going to be rested some day, and pay a little attention to me, Bailey?"

As Bankerville Saw It

THEY looked at each other. Three seconds later he was trying to smother her with kisses. Three minutes later he was still trying. There was a strange mirth in her eyes as she asked him.

"We are married just as Adam and Susanne were, aren't we, Bailey?"

And he had to admit that there was no difference.

They were so busy explaining to each other just what a wonderful thing had happened to them that it was past twelve before she was able to leave his lap.

"I want you to go and buy some new clothes, Bailey," she commanded, "and I am going to have a maid come up here and give me a manicure and help me with my clothes. Then I am going to have a sandwich and go to bed. We will have supper downstairs and then go to the theater. I think that I will be able to look real nice in my new clothes."

They did not recover their equilibrium for several days. Finally it dawned on the bridegroom that it was time for him to start for New York. He had not even looked at a paper for over four days. He and Anna Ruth had not once mentioned the word, "termite".

That night he announced his decision:

"I have a plane and we are leaving tomorrow for New York."

"They won't arrest you there?" she asked, anxiously.

"Not where I am going. You see this is the way of it. I am, or rather I was, a rather rich man. I financed and erected the tallest building in New York city. It stops at the 90th story. Then comes fifty feet of just steel framework and on top of that there is a large roof. On that roof is a little bungalow. Everything is there to enable us to live a long time. There is an excellent landing field for a plane, if a man knows how to land one. Only a few people know this house is up there. After the workers built it I made an inspection and never went back. It was my idea that some day the city dwellers might revolt against the rich. I thought that such a place would serve as a city of refuge till the storm passed. We are going there, little Anna Ruth, and we are going to stay there till we see how things are going to end. When the time comes we are going to go and join Susanne and Adam and that fine old man, Souderman, whom Adam loves so dearly but whom I have never seen.

"I have an idea that the next move of the Giant Termites will be to capture some one of the great cities of the world. It is hard to estimate how many millions of warriors they have in reserve; but it is going to take more than they have to capture the human race if the men and women fight. So long as the race goes down fighting, it will never go all the way down; but, if panic hits them, if they feel that the struggle is hopeless, if the women feel that death is better than mutilation at the hands of these insects, then all the termite warriors will have to do is to form a line across the continent and sweep it clean, killing and eating as they go. There will be no resistance. More people will kill themselves and die of starvation than will ever be killed by insects.

"Suppose we look at the situation from the standpoint of the leaders of the Termites. It might be more logical for them to start in Central America and come north through Mexico or start at the Gulf and come north, east and west through the Mississippi Valley. But all these lines of attack would give ample warning to the great cities. But on the other hand if they simultaneously attacked New York and San Francisco, they catch the nation between two jaws. And if they can depopulate a city like New York, the rest of the world will realize the helplessness of the struggle."

"And you are not going to give them any warning?"

"I would if I thought it would do any good. You saw what happened every time I tried in the past. I think that I told you how we were driven out of New York when we started on our voyage. I am still uncertain as to whether this United States is a single large animal with a Central Ruling Intelligence, or whether we are a self-governed collection of independent units. Perhaps it makes no difference. And one thing is certain and that is the fact that the Government is afraid of me. They do not know why, but they feel that in some way I am in back of a lot of the trouble they have been having. The bulk of the common people hate me; they would cheerfully tear me to pieces if they could.

"There is another way to look at it. Suppose I give the people of New York City warning; would they believe me? If they did, would they be any better off? Can they protect themselves? If twenty million of those giant warrior termites suddenly attacked the city from all sides, can the city, the state, the nation successfully defend it? If the fifteen million people in the city have to die would it not be better for the nation to have them die in one place in one mass, rather than run panic-stricken over the east? I have felt pessimistic about the entire matter since the very start and when Susanne came back with her story of those enormous barracks with long rows of warriors simply waiting for the signal, when I realized that all through the tropics there were thousands and hundreds of thousands of such barracks with hundreds of millions of warriors and as many giant scavengers and workers, I felt that humanity was doomed unless some new discovery

made it possible to kill them in their barracks before the attack began.

"Then, when all the nations in the world started to cut each other's throats and, even in the United States, the Regular Army had to be used to kill our own citizens to prevent the overthrow of the Government and the establishment of an anarchy, I felt more helpless and hopeless than ever; for if every nation in the world were united perfectly against this threatened terror I doubt if they would be sufficient to drive it back. I feel that humanity is doomed.

"At the same time I feel that we, as a race, will not perish from the earth like the cave bear and the saber-toothed tiger. Some of us will survive. There will be little isolated groups remaining alive, holding the torch of the human race, seeing that it does not go out. The termites will rule but they will some day die. They will go on growing every century in greatness and power and, finally, they will reach the height of their destiny. Then something will happen—perhaps a new micro-organism will grow inside them—and, within a generation, they will pass away and live on only in the history they have written in their termitaries and their tunnels traversing the entire earth.

"They will die—but man will survive—and gradually he will repopulate the earth. A new civilization, a better culture, a purer humanity will grow on the decay of older selfishness. New York, Chicago, London, Paris, Petrograd, Canton, will be one with Nineveh and Tyre. That is what I think of the situation and, because I think so, I see fully the part the four of us will play.

"In that City of Refuge, prepared for us by Souderman, we will as best as we can keep humanity alive. We will make records of our culture. We will live on. Day after day we may have to battle with the determined termites, who realize that in us they have the sole frustration of their dreams; but we will survive. They may come against us in tunnels, on foot, even in the air, but in some way we will survive. And in that victory lies the hope of our eternity and the future of the *genus homo*. If we had a million, ten million men with the determined spirit of the two of us, and each man had a wife like you and Susanne, then we would be able to make a successful fight. At least we would go down fighting; there would be no panic, no overwhelming despair.

"Let us come back to these alleged rulers of the nations. If they exist at all they are at present senile, sick imbeciles; I think they are on the point of dying. When they die their bodies will die and entire nations will pass away, never to live again. It has happened before and will happen again. A unit, an individual, a nation, a tree either has to grow or to decay. Perhaps the human race is decaying; looks that way. So what is the use of warning them? What good will it do?"

"But it is horrible, Bailey, to think of the little children playing on the streets, in the parks, even in their houses. Why should they be made to suffer?"

"I do not know. All I know is that I believe humanity is doomed. Let's try to be real happy for a few days. We will leave Detroit early tomorrow morning. We ought to land in our new home within four hours. Thanks to the new inventions, we will settle on our landing field like a fly landing on a cherry. Then we will start our radio and get the latest news—I wonder if Souderman has a radio—just as soon as things become dangerous we will leave. Where we will be is safety, at least I think so. No one will know we are there except the Genral Manager of my New York office and I know he is to be trusted. Not even the termites could climb up. Yes, I believe they could; but they will be so busy that they will never think of us. At least I hope so and, if they do think of us and attack us, we can leave the landing field and go to Souderman."

The Parties Meet

LITTLE Anna Ruth crept into the arms of the big man.

"Dear," she said, "I am frightened, but not for myself. I am thinking of those little babies; I must save some of them. Please stop at the Souderman place on your way to New York and let us see just how things are there. I want to see Susanne and talk things over with her. Just an hour and then we will go on to New York. Just an hour with Susanne so I can talk to her about babies. We must do something for the little ones—we can't help all if there are fifteen million people in New York, but at least some. Please, dear. Let me talk to Susanne."

The big man kissed her tears away and promised her that he would do as she wanted him to. The next morning their plane left for Quebec. At that city they stopped to rest and secure gas and oil; then they started out again, following the shore line of the St. Lawrence on the northern side till they came to the Saguenay.

"Keep your eyes open for a large Madonna on top of a mountain on the left side," cried Bankerville: "Souderman lives near it, on the only place to land for thirty miles."

And in a few moments the Madonna was seen and, on the other side of the river, hundreds of feet above the water level, was the landing field with a few houses on one side.

"That's the place," said Anna Ruth: "It answers the description perfectly." And in fifteen minutes the two women were madly kissing each other and Bankerville was becoming acquainted with Souderman.

"We are on our way to New York," said the banker: "Anna Ruth wanted me to stop here and see how you were located; we are going to stay but a few hours. What kind of place have you? Can you defend it in every way? How many people could you keep up here if they had food? How are you going to keep warm in winter time? Have you any late news about the termites?"

"Is that all you want to know?" answered Adam.

"That is easy. We have fifty acres here on top of a mountain. We have blasted away the only path. The sides of the mountain go down precipitously from 300 to 1200 feet. No human being can climb up here. I have never assured myself that one of those six-legged twenty-foot long termites could not. All depends on the kind of feet they have. They might jump across the gap in the path but that is a place that can easily be defended. There is a lot of easily-worked stone up here and ramparts could be built and houses also. If we had food we could care for fifty small families. Lots of coal for winter use if we have stoves; and we have seen termites down at the boat landing but they did not try to come up. Anything else?"

"Yes, how much food have you?"

"Enough for the five of us for three years. Perhaps a little less. Lots of fish in the river if we could get down there."

"One question more. Mr. Souderman. You have heard Adam's story. What do you think the end of all this is going to be?"

"If those termites want to, they will simply wipe out the race of human beings. Nothing is going to stop them."

"We could as long as our ammunition held out. We could do better with a few more men."

"All you need is food and ammunition and real men?"

"That is all."

"Good. Let's visit with the girls awhile and then little Anna Ruth and I are on our way."

In spite of every reason for gloom the five made a jolly party as they sat in Souderman's cosy library. However the time soon passed and the New Yorkers rose to start on the last lap of their journey. For Bankerville it was going to be a complete circumnavigation of the world. Brother and sister strolled towards the airplane.

"Well, Buddy," she asked with a twinkle. "How is little Anna Ruth?"

"Oh! She's not so very little," was his smiling reply."

CHAPTER XV

A Big Order

THE next morning they circled over New York and finally landed quietly on the top of the United Bankers' Building. Anna Ruth looked in wonder over the city.

"They cannot capture a city like this," she said confidently. "It is too big. And they cannot come up here because it's too high in the air."

"No, I do not think they would ever come up here, but they will take the city; and they may begin to do it right away. How many babies do you want to save, Anna Ruthie?"

"As many as I can."

"That is twenty-five, and each baby has to have a father and mother."

"I want them to be little babies."

"You bet. Little things. I'll get busy at once."

Anna Ruth was delighted with the inside of the bungalow. It was nearly perfect in all of its arrangements, and especially well supplied with everything necessary to do light housekeeping. While she was busy experimenting with the electric stove her husband tinkered with the radio and finally was able to get one of the news bulletins. It seemed that, on the whole, the day previous had been devoid of interesting news; the quietness of the entire world was peculiarly unusual. Congress was in session and was trying to pass a Farm Relief bill; this had been their favorite indoor sport for the last thirty years. While he was listening to the radio the telephone rang. It was the General Manager of Bankerville's New York office calling up as per instructions from the Detroit office.

"I don't know where our private phone 1000 is, Mr. Bankerville, but I was asked to call you there."

"Well, I am here, and glad to talk to you. How is everything?"

"Rather rotten."

"I suppose so. Are you busy?"

"Not very."

"Get a memo pad. I want you to find twenty-five young men for me that have the following qualifications. Are you ready?"

"Yes."

"Clean, healthy family history—under thirty—married—each with a different profession—wife with a clean, healthy family history—men and their wives fond of the open—fond of roughing it—each man and wife with a baby under two years old—mother nursing baby if not weaned—man and wife still in love with each other—both accustomed to firearms and hunting big game—man must know how to pilot a plane—man and wife both college graduates—financial condition no object—get the idea? I want a doctor and a dentist and a chemist—and so on right down the line. Now how soon can you find those twenty-five men for me?

The man at the other end of the line whistled.

"That is a big order, Mr. Bankerville. Do you want me to advertise?"

"No, I want you to pick them. Hunt them out of the clubs and banks and business houses. After you find three or four they can help you find the rest. Tell them confidentially that I am back of it. That I want them to join me in a new business that will pay them big. Get the idea. You find them in twenty-four hours if you can and have them meet me Sunday afternoon at my summer home over on Long Island Sound. I will be there with my wife. Yes, *with my wife*. Certainly I am married, why not? Have them bring their babies if they want to—yes, better tell them to bring their babies—that is important. Now I want you to start on this right away. It is most important. No. I am not interested in the market. You handle the business according to your best judgment. *Find those men.* I will be at my summer home at two on Sunday afternoon."

That evening they listened to a long radio lecture on the unusual happenings in the Pacific Ocean.

Australia and practically all of the islands in that ocean had lost contact with the outer world. The Pacific Fleet had disappeared after fighting off Honolulu. Six celebrated scientists had been asked to give their opinion of why all this had happened and each of the six thought of something novel and at the same time different from the ideas of the other five. There had been no news from Japan for some weeks.

Anna Ruth was in her glory. She prepared the meals, washed the dishes and at night rocked on the gallery of the little cottage and looked at the thousands of electric signs. She seemed content and apparently had lost all interest in the danger that threatened the babies of New York. Two entire days passed without the two of them even mentioning termites. Sunday came and at eleven Bankerville announced a trip to his Long Island estate.

"Some folks there I want to see," he said: "Better go with me."

His home on Long Island was a small place, rather out of proportion to his station in New York society. They arrived there at one to the great surprise of the caretaker and his wife. It was a beautiful day in early autumn. The banker ordered fifty chairs put on the lawn in a very small semi-circle. Then machines began to arrive and by five minutes of two the fifty chairs were occupied by twenty-five young men and their wives. The most of them had brought babies, which they left asleep in the cars or in the charge of nurses. Anna Ruth sat on the grass and Bankerville stood up.

A Meeting on the Lawn

"I AM glad to see you people this afternoon," he started simply, "because Mrs. Bankerville was very much interested in your babies. Most of the credit for this meeting belongs to her. You no doubt want to know why I asked you to come here and so I am going to start at once and tell you."

For the next two hours he talked about the Giant Termites and the belief that he and his associates had that New York and all the rest of the world was doomed. He told the story simply, logically and forcefully.

"Now, up in Canada, Fry, Souderman and I have what we believe to be a perfect fortress. If we have food it will hold all of us. It may have to be defended by force; we hope not but it is entirely possible that these termites can climb the wall. If they do all of us, including the women, will have to fight —that is why I selected men and women who were accustomed to big-game shooting. If we have food we can live up there indefinitely, if we can protect ourselves. The only way to get there is by plane. We have twenty-five men here with their twenty-five wives, and the condition was that they are in love with each other. There are in these families twenty-five babies. We want to save those babies. Now my offer is this. I will buy each of you a plane. I will buy all the supplies of every kind you can carry for as many trips as you have time to make. Each of you is a specialist in some line. Take a small library of your specialty and the necessary instruments of precision. Be prepared to practice your specialty in a community of less than a hundred people that are going to be isolated from the world for an indefinite period. Get everything there. Arrange to build your houses. Take your wife and children there if you want to as soon as you have a place for them. Above all take big-game guns, lots of ammunition and all the food that you can carry. Keep at it. Remember all the time that what you are doing is to save your wives and children and yourselves from a horrible death, but it is going to do more. We will form a new nation. We may easily be the only civilized group left alive on the earth, and we will have to carry on for the future of humanity. Any questions?"

Finally one man stood up and said, simply:

"I think that we would like to hear from your wife."

Anna Ruth stood up. She seemed that afternoon very much of a woman. She walked over and took a sleeping baby from the mother's arms and said:

"I wanted to save at least a few of the babies in New York. We cannot save them all, but we can save a few, and I cannot imagine a baby without a father and mother and so we just wanted to save them too. That's all."

A big bronzed man stood up, and there was a baby in his arms, a biggish baby with flaxen hair and blue eyes like the father. The man said:

"I never saw Bankerville till today—but I know him by reputation. There is not a single big-game hunter but has read his books; he has never lied in his books and I do not believe he is lying now. His wife certainly is not. I am going to go with him. I am worth five millions, but I would burn it all to save this little fellow in my arms and his mother by my side. His mother and I hunted tigers in Bengal when we were first married. We know what danger is. I am going to get in this game. Any more that will? Stand up."

The General Manager of the Bankerville interests in New York City had been selected because of his efficiency. He had personally chosen these men to attend this meeting, and a proof of his efficiency was shown in the fact that every man stood up.

"Fine!" exclaimed the multi-millionaire. "Now, let's get to work. Is there a banker here? Yes—well I will give you a letter of credit for ten million to start with. Men, you go to Mr. Jenkins of the First National tomorrow and he will finance you. Suppose we men organize into a few committees and arrange everything, while the women get acquainted with each other and admire the babies. First I want to tell you how to get to Souderman's place."

All that week and all the next week twenty-five planes were making regular trips to Souderman's mountain. Small houses were built, some of the women moved there and started housekeeping. The plateau hummed with life; and still nothing happened. Bankerville was at his private phone, almost all the time, arranging details of every description

while Anna Ruth cooked for him and tried to save his strength. Then, one night, They came——

The Invasion

IT was an extraordinarily warm day for that time of year; enough so, in fact, to send several thousand people to Coney Island and the other bathing beaches. The sky, blown clear by a steady wind, was remarkably clear: "The stars are as they were in Australia," commented Anna Ruth. Then the 'phone rang:

"Is this Bankerville?"

"Yes."

"Well, they are having a panic down on the beach at Coney Island. I cannot get the details but, whatever is the matter, it's bad. Two thousand of the Police Reserve have been ordered down. From my house I can hear a constant discharge of firearms. Do you think things have started?"

"I think so," answered Bankerville: "Send the code warning to every man, telling him to get up in the air with his wife and baby. He can stay over the city if he wants to till morning, but I think they had better beat it for Canada. This is the way it started at Sydney and Venice. They came out of the ocean there. *Get busy.* Tell them I said to get out and stay out. I am going to stay here till the end. Someone has to see it, but not you men. Hurry! Have each man signal to me as he flies over 1000 on his way north."

He came back to Anna Ruth and sat down on the arm of her chair. A little wearily, he sighed as he took her hand. Finally he said:

"I guess They have come. There is a big panic over at Coney Island and the entire police reserve has been ordered over. I have sent out the order for our men to get their families up in the air."

"Are we going to stay here?"

"I think so. Someone ought to stay here. We can see over some of the city if we use our glasses. Let's sit here a while. I told the planes to fly over and give the signal on the way to Canada."

They leaned back so they could see the sky. Soon a plane sounded overhead and a little fire balloon dropped, blazed a while, and then went out.

"That is Number One," said Bankerville.

And so they counted till the twenty-fifth one went over and then they went to bed.

"I wish I had something to think of except termites," said the man: "I have thought so much about termites that I am just tired of them."

"Suppose I give you something new to think about," whispered Anna Ruth, and she kept on whispering to him.

"Well, I declare," he said as he kissed her. "No wonder you wanted to save a lot of babies."

So he was able to stop thinking about the termites.

The next morning, the radio bulletins started bravely to give the news. All during the night the city had been attacked on all sides by a new form of insect life. Various descriptions were given, none of them even approximately accurate. A number of people had tried to leave New York, but every avenue of escape was either wrecked or blocked. The President of the United States had been notified, regular troops were on the way—the reserve militia had been ordered out. People were barricading themselves in office buildings, filling the stairs with office furniture and stopping the elevators. There was bad news from New Orleans and San Francisco; it seemed that the same things were happening there.

Bailey Bankerville left the radio and went out on the roof with a high-powered glass. Far below him he could see the street and little people driving and running over it. Now and then came the sound of a rifle. He said to himself:

"There is no use trying to see everything. What is happening all over the city will happen down here if I wait long enough."

"Let me see," demanded Anna Ruth, but he refused.

"You go and cook a good dinner and then you put everything you want to take with you in the plane because we are going to travel soon. I do not want you to see this. You go and cook a dinner. Please."

The street he had selected stretched for several miles, a thin white ribbon with tall apartment and business houses on either side. It ran north and south. For a while all the cars and people seemed to be going north. Then the tide turned and the north-bound current was caught by the south-bound. There was a confused, milling mass.

"Termites at each end," said Bankerville.

Now, from the south, he saw a black mass advancing. It was too far away to get the details but the street seemed clear beyond that mass. A similar mass was seen a few miles at the north end of the street. The people were leaving their machines and running into the houses and down into the subways. The two black masses came nearer. Finally Bankerville could see the details of one; from one side of the street to the other it was a solid line of termite warriors, slowly marching forward. Occasionally they caught a man or woman and cut him in two; once dead, they paid no more attention to the victim. At every opening of a house they broke in and entered. The average door was powerless against the five-foot jaws.

Back of them came another black mass. The banker focused carefully on these. As he expected, they were the scavengers, the workers. As they came to a mutilated body they stopped and devoured it. In the entire movement there was no haste, no indecision; they simply went on. Finally the two groups of giant warriors met; that street was clear. Other groups came up, moving rapidly to a new attack. In the distance there began a steady roll of fire. "Machine guns! The army has come!" muttered the banker.

He ran into the cottage, crying:

"I have just got to see this, Anna Ruth, I am going up in the plane."

"I am too," said his wife and nothing he could say could change her mind. So they started to fly

over the city. It was hard to tell what was really happening. Central Park was a dense mass of people; thousands could be seen trying to enter the Metropolitan Museum. All of Fifth Avenue was a dense line of blocked automobiles. All around the city policemen, soldiers and isolated individuals could be seen fighting against enormous odds. Now and then on a cleared street a man could be seen running with a giant termite after him; such a chase was usually short. All along the Hudson River shore the ground was black with the termites coming out of their tunnels. Out on the river boat after boat was sinking, some exploding as the water reached the boilers. The bridges were interesting; everyone was guarded by a solid mass of termites. There was no doubt that an extremely intelligent effort was being made to shut New York off from the rest of the world.

"It is going to go on like this for a few days, and then the fighting will be over and they will clean up. For weeks these people will hide in subways and houses, but hunger will drive them out finally; and when they come out they will be killed. If this is happening all over the world, you can see for yourself how helpless mankind is to protect themselves."

He started up the engine and slowly sailed up the Hudson River valley. Here all was apparently peaceful and quiet. Large country estates lined the water's edge. Over one of the trim lawns a woman in a nurse's uniform came running. Behind her came a termite. Shrieking as she did, she threw a little baby into a hedge. The termite killed her and then stupidly turned to see what it was that she had tossed into the air.

The giant insect heard the baby cry and, at the same time, heard the buzz of the plane. Perhaps he thought that it was some kind of a dragon-fly, for he stood on his hind legs and waved his five-foot head in defiance. Bankerville turned the plane slightly to the left and passed him; but, in doing so, caught him so that one of the wings cut his head off. On went the plane up in the air; but as soon as he could the clever pilot turned and made a landing near the giant warrior. Jumping out on the ground with rifle ready to fire he ran towards the insect, but there was no more danger in that one. He then dashed to the hedge and picked the crying baby up and carried it back to his wife.

"What's to be done now?" he asked: "Do you suppose the parents are dead?"

For answer she simply begged him to get in and off the ground with the machine. They were barely fifty feet in the air when a dozen warriors came running down the lawn.

"That's the answer," she cried in his ear: "Everyone in that house is dead except the baby. We will just have to take it with us."

They went back to the cottage on top of the building; went back there and prepared to leave New York. There was still occasional firing, but it seemed that all organized opposition had ceased. Anna Ruth held the baby close to her heart.

"I want to leave, Bailey, and go up to Susanne and the other women. There is nothing more that we can do here. When we start I want you to make altitude right away. I just want to see the clouds and the cool stars and the old familiar moon. I am not frightened up there with you, but I am down here. Perhaps at any time some of those termites might decide to climb up here and see if there is anyone to eat. So let's go. I do not know what is facing us in Canada, but any thing will be better than this dreadful city of the dead."

Without speaking, they sailed up into the moonlit sky.

CHAPTER XVI

Waiting

LIFE in the Souderman Colony was a busy one that fall, for extensive preparations had to be made for winter. At the last moment it was found that many additional supplies were needed, and efforts to secure them at Quebec ended in failure; as that city had been thoroughly depopulated by the termite army of occupation. Several planes finally went over to the island of Newfoundland and bought out the few large stores. The people there had heard vague news of the destruction of Quebec, but did not seem to feel that it would affect them. They were glad to get Bankerville's gold.

On the hilltop, stone houses were built and the cracks stopped with cement. Coal was dug and stored inside and outside the houses and storehouses were built to protect the supplies of food. A small hospital was erected. Everything possible was done to make it a comfortable winter for the 81 persons composing the colony. After that was done, the men put in long hours completing the defences of the colony. At necessary places stone ramparts were built. A supply of stones was laid handy, to be hurled over the top; stores of ammunition and dynamite were caché̂d at intervals all around the edge of the hill. Electric lights were placed at regular distances and a twenty-four-hour schedule of sentry duty established.

Nothing was left undone to keep up the morale of the colony. Concerts were a regular feature of the long winter evenings. Regular courses of study started by the various specialists were enthusiastically attended. First-aid lectures were given by the physician. Finally, every man and woman was drilled in their duties in case the hill was attacked. Each of the adults had constantly within reach a large shotgun shooting buckshot, and an elephant rifle that threw a very heavy, soft, expansive bullet. There was an abundance of ammunition.

All that winter they waited and nothing happened. When they had first come to the hill radio messages were common. Now for several weeks none came. They felt that this was an ominous sign. They had no definite proof, but they felt that the termite invasion of the civilized world had been a complete success. Their supposition was more than correct. Aided in every way by the stupidity of the human beings they faced, the Giant

Termites had experienced no difficulty in overwhelming the human termites. The entire world had been swept clean of practically all life except that of the birds and smaller insects. Even in China, that most densely-populated part of the world, the cities, plains and mountains were quiet and lifeless.

Only on Souderman's hill remained a last remnant of the once proud beings that had called themselves the rulers of the earth. Winter passed and spring came. The ice melted in the river, the grass sprouted on the hill, the snow ran off the Madonna, washing her white robes and bathing the face of the Infant in her arms. Spring came, and with it came a few new babies in the colony. Spring came—and with it the termites.

They had been expected; for many days a careful watch had been kept on the sand around the boat landing. One morning they were seen running out of the hole in the beach like so many little ants. Bankerville waited till there were several hundred there, and then ordered the rocks rolled down on them. Many of the rocks hit their mark, but at once the insects sought shelter in the cracks and further bombardment was useless. They kept on coming out of the hole and then it was seen that they were climbing up the old pathway. On the hillside a barricade had been erected. A gap of over thirty-five feet separated the two sides of the road. At this barricade some of the best trap shooters of the colony had been stationed with shotguns. It was thought that, if the warriors tried to spring across the gap, the best plan would be to blow their heads off with explosive buckshot. The path was so narrow that no more than one could come up at a time for the jump.

The men had guessed right. One after one the insects came and jumped for the other side of the road. One after one, their heads were blown off with explosive buckshot and their lifeless bodies fell six hundred feet below on the beach. This kept on till guns were hot and shoulders sore and trigger fingers weary, and finally an end came. The watch was continued but never again was an attempt made to break through the old pathway.

There came several days of anxious quiet. To Susanne belongs the honor of blocking the next attack. She was walking over the meadow one day when she felt the ground tremble under her feet. She knew—quicker and more sure than anyone else—what that meant and at once sounded the alarm. The machine-gun squad came and just as soon as the first opening appeared sprayed the hole with bullets. Then a half-ton of dynamite was lowered into the hole and exploded; at once there was an extensive settling of that part of the meadow. It simply meant one more place to watch, but that form of attack was not tried again.

And now came a slow and careful process of preparation. For a while around the bottom of the hill every tree was eaten, every large stone broken to pieces. The land was made as smooth as a table and, on that ring around the hill, an army of Giant Termites gathered. Everything necessary for a successful attack was there. Even termitaries to house and protect the Things that ruled and gave commands were erected. None of the men could tell how many warriors were stationed there in silent rows, waiting week after week for the word of command.

On the top of the mountain the men slept on their arms. The women went from post to post with food and ammunition. Arrangements had been made that, when the attack began, all but five of the women should take a place back of the ramparts with the men; the five were to care for the babies in the nursery house. Susanne and Anna Ruth were assigned to this work in spite of their protests. Everything was arranged for and not a detail overlooked. It was felt that the main attack would be at the side where the cleared land came within three hundred feet of the top. While there were still some planes in perfect condition it was decided that it was useless to think of making use of them. Humanity had to stand or fall on Souderman's hill.

Besieged

IN spite of the doctor's orders, Susanne came out one afternoon. Her husband met her and pleaded with her to go back.

"Nonsense," she replied: "I want to see something. Let me have that spyglass." She spent many minutes looking at the thousands of warriors below her. Then she asked to see Bankerville.

"Brother," she said, "There are two kinds of warriors down there. Those with black heads and those with white. I think that the white-headed ones have the protoplasm of the Central Intelligence inside their skulls. There seems to be no doubt that the attack will come on this side. Why not have your best sharpshooters here and, just as soon as there is any movement forward, try to kill all those white-headed warriors? I feel psychic today and that is just an idea I have after looking at them. I think that I can hear them give orders."

"I will try it, sister dear, and now please go back to the hospital."

It was only an hour later, exactly at nine in the morning that the first wave came up the hill. It was slow climbing and often a warrior would fall, crushing a dozen more in his pathway to the foot. Twenty men and women were slowly picking off the white-headed warriors, using the elephant guns with the soft explosive bullets and always aiming for the head. The crawling movements of the insects were so slow that they made perfect marks. Others of the defence used the machine guns or hurled stones down the side of the mountain. The attack kept on for three hours and then came to an end. Fry glanced curiously over the top.

"What horrible efficiency!" he exclaimed: "They have ordered the scavengers out to eat up the dead and the wounded. They are going to have everything neat before another attack."

At two in the afternoon another wave came. Once again a determined effort was made to destroy all

the white-headed warriors, but there were not so many in this attack. The killing was deliberate and almost systematic but the attack was just as persistent. It kept up for three hours and then died away. Once again the scavengers devoured the bodies of the slain. Within two hours there seemed to be as many waiting to attack as there was at first.

Souderman took Fry aside:

"Of course we are killing them," he said, "but we cannot keep on forever. They have the entire world to draw on for reinforcements. All we are doing is furnishing them with meat for the new forces. Something has got to happen or we are lost."

They decided to call Bankerville to a conference. But he was busy with the pathologist of the colony.

"We will try it," they heard Bankerville exclaim: "Anything is worth while at this point of the battle. I am sorry to sacrifice the cows and the goats but it has to be done. By Jupiter, the women will have to nurse their children from now on—no, let's leave a buck and three nannies. That still leaves you twenty-five animals for the experiment. They all will be eaten anyway. Get your hypodermic and your dope. Men, bring all those animals to the edge of the hill. Just leave a flock of four. Save three of the females that have little ones. Now men, this is our last hope. The doctor is going to inject something or other into these animals and then over the top they go. But don't throw them over till they seem to be very sick. Is that the idea, doctor? You want to be sure that it is working?"

So the twenty-five sick and dying animals were thrown over and were at once eaten by the scavengers; who, in their turn, went around during the lull and fed the waiting warriors with the regurgitated contents of their distended stomachs. Now the attack began again; like the other two, it lasted three hours. This time several of the insects reached the top, jumped over, and died on the inside of the wall. But finally it came to an end at dusk, and the dead warriors were pulled to the edge and thrown over. A searchlight thrown down on the plains showed the same carnivorous cleansing of the battlefield. All that night an anxious watch was kept on the ramparts. The women made regular trips with nourishment and food, and some of them even took their husbands' turn at sentry duty. In the hospital the doctor and nurses anxiously waited.

A New Race

MORNING came at last. The guard over the wharf reported that new warriors and scavengers were constantly coming out of the hole. On the other side, where the previous attacks had been a curious condition existed. As before the waiting warriors were drawn up in battle order waiting for the orders to advance. Scavengers and feeders marched down the rows feeding the fighters their breakfasts by throwing quantities of gastric contents into their opened maws.

Souderman, Fry, Bankerville and the pathologist were carefully watching the procedure through spyglasses. Every few seconds they saw a warrior or a worker roll over, apparently dead. At once he was pounced upon and eaten by the scavengers, and his place was taken by another warrior from the rear. At eight a. m. the attack began, but Bankerville had given the order that no more ammunition be used. Rocks could be rolled down the hill, but no more shooting; at least not till he said so. This attack seemed slow compared with the previous day's advances. The warriors seemed weak and uncertain and very often one would lose his hold and fall down. They came within a hundred and even within fifty feet of the top and there they hung. They were close enough so that their faces, their eyes, could be seen. They came just so far and then they came no nearer; they hung there just so long and then they dropped off dead.

Down on the level a new lot of scavengers started to eat the dead and feed the living with the digested juices of the warriors' bodies. Bankerville turned to the pathologist and took him by the hand:

"In the name of our colony I thank you," he said simply: "I thank you for our wives and for our children. Souderman, take command. Adam and I want to go and see how our wives are doing."

The men of the colony crowded around Souderman and the pathologist.

"It was really very simple," said Dr. Jones, the pathologist: "Souderman and the others told me of the habit these insects have of eating their dead. They also said that the warriors can not feed themselves but have to be fed by the workers; the warriors have such enormous bills they can only fight. Now, I felt that if I could find a new and deadly germ and get them to eat it, and feed it to each other, that I might introduce an epidemic among them. I might even rid the entire world of them. I had some germs of bubonic plague with me when I came here and I cultivated them until they became about ten times more virulent than ordinarily—and they kill quick enough then. These termites have absolutely no natural resistance; they have been free from disease for so many centuries that they simply did not know what disease was. But this new race they bred had quite a little of the human nature in them. I simply injected the cattle and goats, and you threw them over. You see how it worked. They are going to keep on dying and their bodies are going to be eaten and fed to more warriors and, finally they are going to spread the disease to the whole world of termites. Right now some of them are carrying it back to Canada and the States and that is the way it will spread. They do not know yet what has happened to them. Even the Things that govern them are going to get sick and die. I would keep guard, but I do not believe there will be another attack. In a year or so it will be safe for us to go back into the world and start a new race."

When they came near the hospital the two men, Fry and Bankerville, paused.

"In a way," said Adam softly, "this takes more

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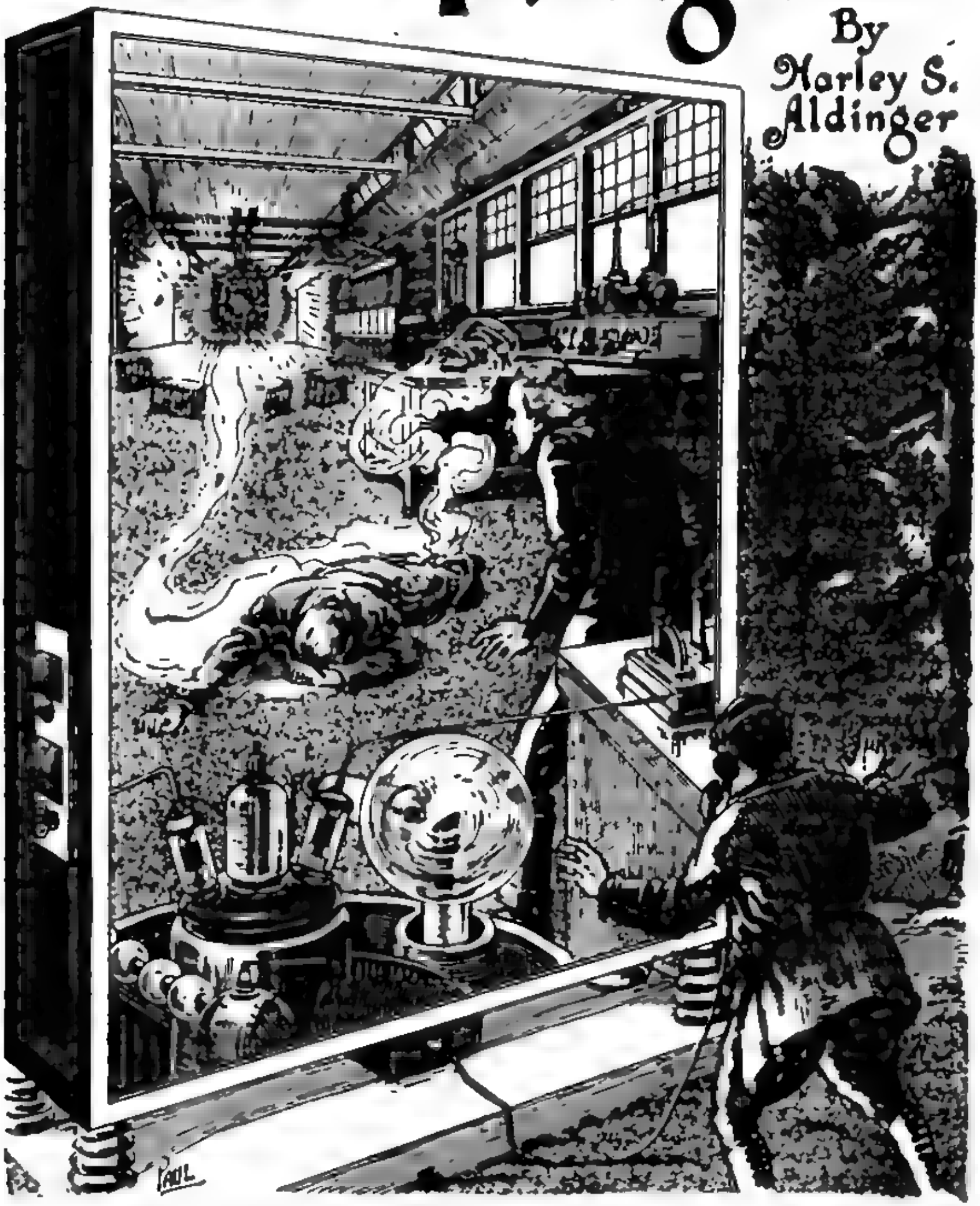
The GREEN Intelligence

By Harley S. Aldinger



I became abruptly conscious of the horrible truth. That green luminous mist—the metal monster's hands—were creeping forward. Then the aura swirled, fast as light, and enveloped them. They tried to run but could not.

Illustrations by Paul.

THE GREEN INTELLIGENCE

AN air pilot by profession, and an adventurer by nature and by choice, I have never led a prosaic, uneventful life. Quite the contrary! But, towering above all other episodes in my experience, the Markham case stands alone. For sheer thrill it remains unsurpassed; but, for all of that, I should not care to go through it again.

I had not long been a professional flier, and was, indeed, looking for a job, when I was invited by one Edwin Spencer, a lawyer, to call at his offices. He was acting, he informed me, for two of his clients, the brothers Markham, who were in need of an air chauffeur. He explained the drawbacks of the position candidly enough. The Markhams were scientists, wrapped in their own work and uncommunicative, except with each other. Their only servants, a man and his wife, were deaf-mutes. Their house was situated on the side of a mountain, miles from any neighbor and fully thirty miles from the nearest village. Not an especially enjoyable prospect.

HARLEY S. ALDINGER

Bleak though the proposition, however, the salary offered certainly was not. In fact, it was so generous that I was tempted to accept without further deliberation. But the work—?

"The Markhams," Spencer said, in response to my question, "have recently acquired a desire to fly; for pleasure, I presume, as they have no need, known to me, for transportation to any other place. They have purchased an airplane and turned over to me the task of finding a pilot. If you enter their employ, not much service will be required of you; as they religiously spend ten or more hours a day in their laboratories. You will have no duties other than flying the machine and taking care of it."

I considered quickly.

"Done!"

"You'll take the position?"

"Yes."

"Good. When can you leave?"

"Immediately, if you wish."

"You leave tomorrow, then, at noon. Call here tomorrow morning and you will receive a ticket, credentials, money for a flying wardrobe, and more specific directions for reaching your destination."

He rose. The interview was at an end.

At twilight of the next day a chuggy local brought me into the little western town of Shotsford. I entered the only hostelry and made myself and my business known to the proprietor—told him I wanted to hire someone with an automobile to drive me to the Markham place. His jovial face seemed to alter at the words. There was repugnance, curiosity, and just a little fear in his eyes and voice when he spoke again.

"So you're goin' to live in 'The House on the Mountain,' eh? Well, I guess I don't envy you none."

"What's that? What's the matter with it?" I could see that it was not just the loneliness of the site that disturbed him.

"Nothin.' I ain't said anythin' but what it ain't all right, have I? I got nothin' against the Markhams. Only—"

"Only?" I prompted.

"They're queer people, all right, them scientists. But those animals—"

I waited, but he seemed indisposed to say more.

"You people haven't got the idea that the place is haunted, or anything like that, have you?"

"Haunted? Whadaya mean? Think I'm a kid or somethin'? Of course it ain't haunted; and if it was, who'd give a damn? We're men out here."

"And concerning the animals?" I pressed.

"I got work to do. If you kin git hold of Jeff Todd up the street, he's got a good car an' maybe he'll take you up. Ef he won't, nobody will."

About the Markhams

JEFF TODD, an old-timer if I ever saw one, was puttering busily with the engine of his car when I came into his yard. The machine was an ancient Franklin that hadn't more than a few mountain climbs under its hood.

He straightened up when he saw me, wiped his fingers on a bit of waste and shook my hand; even before he knew who I was. Strangers were fairly scarce in Shotsford. When I explained my mission, he readily agreed to take me to the Markham place immediately. He seemed to be of hardier stuff than the innkeeper—less liable to groundless superstitions and beliefs.

"It's a terrible road

IT is a failing of us humans that we presume that intelligence resides only in animals. It seems inconceivable to us that there could be intelligence in a plant, in a metal, in a rock, or in a gas. This merely shows our ignorance, because there is no reason whatsoever to believe that intelligence, mind, and reasoning could not just as well be contained in a non-human shell. Reasoning processes, in a way, are machine-like, and, as a rule, 90% of our thinking is done through either sheer weight of instinct, habit, or repetition of thoughts that have gone before. Original thinking even in the most intelligent human being is a rarity. That there could be some intelligence entirely different from anything that we know of, is possible and our present author has dealt cleverly with this thought. Incidentally, he has given us a rattling good story, that is as wonderful as it is exciting. We know you will be delighted in our new author.

up the mountain," he said, "but she'll stand it all right"—indicating the car. "I just had that big running-board light put on. It's sure powerful. We'll git up all right with that on."

Fifteen minutes more of tinkering, and we were off. Almost immediately I asked Jeff the meaning of the inn-keeper's words. He laughed gruffly.

"That fat-head and the hotel crowd are as bad as old maids. There ain't nothin' to that talk. They think it's funny that the Markhams don't want nothin' to do with 'em, but I don't. I don't think much of the citizens of Shotsford."

I questioned him further.

"Well, I'll tell you all I know about it," he assented. "It ain't much."

"The Markhams have been livin' on that mountain for a long time—fifteen years, maybe. They're scientists. Not inventors—they don't invent nothin' that I ever heard of, but they just work around. Put a match to a little dynamite to see what it'll do, or somethin' damnfool like that. They ain't ever talked any to us folks—never come down into town, even. Fact is, nobody from outside's even seen the old geezers for five years. They send their man-servant—he an' his wife is deaf an' dumb, y' know—to town for stuff to eat an' anythin' else they need. Sometimes they send him out of town. They send away by mail a lot for things, too.

"Well, the town never did like 'em overmuch, but they like 'em less since the animals have been comin' in. Monkeys an' dogs an' cats, mostly, an' a few birds an' lizards an' fish an' snakes an' what-not. The town's down on vivisection, an' that's what it suspicions. Luke Hollyer went up there once an' saw the servant man buryin' a lot of dead animals. Luke looked 'em over close while the feller was buryin' 'em; but he says there wasn't a scratch on 'em."

Jeff expertly pulled the car out of a rut. "That's all I know," he said.

It took three hours to cover the thirty miles between Shotsford and "The House on the Mountain". At the end of that time we were rewarded by the sight of a great gray mansion of rambling contour with many gables that shone silver under the full moon. It was situated on the very brink of a cliff; behind it stretched a wide, grassy, level space, the floor of a great niche in the mountain side. On this space, at the mansion end, was a construction that I immediately recognized as a hangar; and my heart gave a leap at the thought of again putting my hands on a set of controls.

Jeff dropped me and my luggage before the door, and, calling to me to visit him soon, rolled away.

The main door was on the side of the house away from the cliff; and this side was entirely without illumination from the inside.

I had to ring long and hard before I received any response. Then, suddenly, lights flashed on and the massive, carved door swung heavily inward. Revealed in the bright rectangle of the doorway was a man, a huge, hulking mass of flesh with the suggestion of great strength; he was dressed simply and roughly, and without coat or necktie. He stood aside silently and motioned me in.

Perceiving that he was considerably younger than I understood the Markham brothers to be, I immediately came to the conclusion that this must be the deaf-mute servant. Accordingly, I said nothing, but dashed off my name and business there on a page of my notebook; which I ripped out and handed him, together with my credentials. He glanced over them cursorily, nodded his head, and wrote a return note on the back of mine in a coarse, cramped hand. The Markhams were in their laboratory and would not see me until morning. Would I eat, amuse myself about the house, or be shown to my room?

Being exceedingly tired from the hard, jolting trip in Jeff's auto, I elected to go to bed.

Mounting the broad, sweeping staircase, I started, suddenly and involuntarily. I stopped, paused to listen for the repetition of some sound—what, I did not know. The clumping footsteps of the man before me ceased also; he had stopped to see what was keeping me. Then I heard it—or them—louder than before. Barks, growls, yaps—both shrill and deep—of dogs, dozens of dogs!

I looked inquiringly at the deaf-mute—Franz was his name, as I learned later. He shrugged, shook his head, and, motioning me to follow, led the way upwards again.

The next morning I met the Markhams. They looked alike enough, with their iron-gray goatees, studious expression, and sober black clothes, to have been twins. The eyes of David, however, were gray and cold; while those of James were blue and a little kindlier.

"We shall tell you in advance," said David, "when we shall require your services; so that you may hike or fly about the country-side when we do not need you. Operating the plane will be your only duty. You may have the run of this part of the house, including both libraries; but you are to keep away entirely from the left wing, which is devoted to our laboratories."

A Strange Proposal

IN the weeks that followed, I had little to do. I took the brothers for rides in the air each afternoon for about an hour; moving slowly for a plane, at low altitudes. They seemed to enjoy it; though it always seemed to me that they would have been more enthusiastic over a bit of chemical in a test tube. There was little conversation between them, and none with me.

I had at all times the free use of the plane and all the fuel needed; so I early acquired the habit of taking long jaunts by myself. But even that became boring, so I turned to the libraries. Shelves and shelves of scientific books of all kinds, literally thousands of them, were all the reading matter to be found. I began reading them and, although never before interested in science, I found them so engrossing that I was hardly ever without one. It was in this way that I finally really came to know

the Markhams. They were quite as pleased at having me become an enthusiast, as a missionary would be after having converted a heathen; I believe they actually looked at it in that manner. As a result, I was given access to some of the laboratory rooms; and they took turns in expounding to me their views, most of them too technical for me to follow. They adopted me, without saying so in so many words, as their protegé.

"As you know," James Markham told me one day, "there are laboratories here which you have not as yet been permitted to enter. They contain our choicest and most advanced experiments. Some of the knowledge we have derived from them would astonish theoretical scientists; some would destroy the foundations of accepted beliefs; some few practical ones would revolutionize whole industries; and there is one—our greatest—which transcends a universe in importance. Frankly speaking, David and I like you, King. You are intelligent, interested in science and, above all, do not possess that extreme skepticism lamentably evident in so many present-day scientists. It is our fond desire that, some day, when you are sufficiently advanced in your studies, we may impart to you the knowledge we have gained. Realizing that we may meet our ends suddenly and without warning, taking our discoveries with us to that destiny, the nature of which we have yet to discover, we have long wished for such a person as you. We knew nobody outside, and our servants, faithful though they are, are not—er—overly intelligent. It would be a severe blow to us, now that we have accepted you, to have you refuse the commission."

"I am afraid I can never be a dyed-in-the-wool scientist," I answered, "but I find myself very enthusiastic over the proposition, and I'm willing to try."

"Thank you," he said gravely: "You will never be sorry; for we offer you greater power than any man, other than ourselves, has ever possessed."

Six weeks later occurred the next important event in this strange tale of ours. During those weeks three shipments of animals came in. The first two were small—of ten each. They were taken in their cages into one of the laboratories forbidden to me. The next day the giant Franz wheeled their dead bodies across the take-off field and buried them. The brothers, in spite of their constantly-growing affection for me, and my attempts to lead them around to the subject, steadfastly refused to speak concerning the animals or their fate.

Then the third shipment came in—twenty dogs of the more intelligent breeds, and ten monkeys. That was on a Tuesday afternoon. On Wednesday evening, while I was working in the laboratory, a singular drowsiness came over me. I went to bed and could scarcely keep awake long enough to draw my clothes off, don my pajamas, and climb into bed.

I dreamed—a very strange and eerie dream, of a strange indescribable thing. Something was drawing me to IT, as a lodestone draws a bit of iron. I was clothed in luminous green; all the universe, it seemed, was lighted by dim, green lamps.

I regained consciousness suddenly to find that both my arms were being held and that I was being shaken roughly. Opening my eyes, imagine my consternation to find myself standing upright in a green-lighted laboratory which I had never before entered! Shaking me were the two Markhams, both also in pajamas! I stared about me and at them in amazement.

"King," said David sternly, "you were never nearer death in your life than you were just a moment ago. We stopped you on the very brink of destruction. Are you often troubled with somnambulism?"

"Never before, to my knowledge," I replied: "But what do you mean by saying I almost met my death?"

"If you had ever walked into that green aura, in your unconscious state, nothing could have saved you."

I turned my eyes in the direction to which he was pointing. Suspended from sturdy steel rafters by heavy chains, at a distance of about eight feet from the floor, was an intricate contrivance made of thousands of small pieces of metal of all shapes, all fastened together by the same substance. The metal, the like of which I had never seen before, was dimly luminous and an emerald-green in color. The whole mass was about five feet on an edge, and irregularly cubical in shape. It was connected by wires to eight great storage batteries which rested on a table against one wall of the large room. The strangest thing of all, however, was the extraordinary sight of a quivering, emerald-green mist, surrounding the apparatus to a depth of perhaps six feet in all directions, and apparently flowing from the metal. On low benches, sufficiently high to bring their surfaces within the limits of the green mist, were several cages, containing the now-lifeless bodies of a dozen dogs and monkeys.

I turned back to the brothers. "Very strange coincidence, that aura," I said, in perplexity; and proceeded to recount to them my dream, in which that same luminous, emerald light had been so in evidence.

Strange to relate, the faces of both suddenly became very pale. David frowned and James' hands twitched nervously. The latter was the first to speak.

"It *drew* him, David, It *drew* him! Its power extends beyond the aura! I told you last time It was becoming too powerful. We have nearly murdered a man, David! And do you realize what the results would have been? With the added power of a single human intelligence of superior quality, It would have overcome *us*. With our minds assimilated, Its influence would have extended farther; and so on, in ever-widening circles, until It remained the sole intelligence of the planet. We have made a Frankenstein, David, with the power to destroy humanity and all living things!"

The Markhams Explain

DAVID'S frown became blacker. He nodded. "You are right, of course."

James picked up a pair of wire snips. "I have a good mind to sever the connections without further hesitation," he cried.

"And ruin in the stroke the accomplishment of a lifetime? No, James, I do not believe that is necessary. If It can do great harm, It can also do great good. As our master, nothing, I admit, could be worse than It; but as the servant of mankind, It would make this world nothing short of Utopian."

"But am I not to have an explanation of it all?" I cried, my mounting curiosity getting the better of me.

Both started, evidently having temporarily forgotten me. Then David nodded slowly. "There is no doubt but that we owe you one," he said: "Perhaps if you had known about It before, this unfortunate near-catastrophe could have been averted. Certainly you would have become suspicious when that involuntary unconsciousness began stealing over you. I shall, then, briefly describe to you the nature of the Thing you see before you.

"You know, of course, that at the present time man, despite his advancement, has learned but little of all there is to be known in nature; so the conception of an utterly new metal should not astonish you particularly. The green metal, slightly luminous, that you see here has never before, to the best of my knowledge, been known to exist. We derived our supply from a meteorite that fell on this mountain; and this is all that remains which has not lost the strange power I shall tell you of. When we first came into possession of the metal, we were carrying on a large number of experiments; but we devoted spare moments to the finding of some use for it.

"Once, purely in blind experiment, we sent through it a small current of electricity which, by some oversight, was not turned off that night. The next morning, upon entering the laboratory, we were considerably astonished to find our big gray cat, which was a pet, dead beside the metal. That in itself would have been passed over with but little thought; had it not been for the astonishing fact that the strange metal was now surrounded by a luminous green vapor, having the cat within its limits! Very strange—a physical phenomenon without parallel, that! James experimentally opened the circuit. The green aura vanished—evidently it had been caused by the current.

"James closed the circuit again, but, strange to say, the peculiar green mist did not reappear; nor could any efforts of ours induce it to do so. Greatly interested, we attempted continually to repeat the phenomenon; but in vain. We even placed a cat near the metal; although we did not think that could have had anything to do with the occurrence. Not content until we should have tried every recourse, we brought in from the meteorite a fresh piece of the metal and passed a current through it. No result. Idly, I pushed the cage containing the cat toward it. *Voila!* Upon the motion, the cat reeled about for a few seconds, tried to escape, then collapsed and was dead; and the same, strange, luminous, green aura formed. We opened the circuit and again the mist vanished, and, as before, could not be made to reappear.

"We brought in more of the meteorite's strange cargo. We found in every case that the metal, with an electric current passing through it, was able to kill any form of life and form an aura by the killing; yet it lost the faculty altogether if the current were shut off for a single instant. A fresh piece of the stuff, of sizable dimensions, could kill only a small animal, but It could kill any number; and Its power seemed to accumulate with the deaths, for the aura extended farther with each victim, and as a result Its capacity for larger victims grew. An animal had to be completely within the aura to be acted upon.

"An amazing fact, for which we could not immediately account, was that a small animal of great intelligence actually extended the aura farther than a large animal of small intelligence. Could it be that the *intelligences* of the animals caused the phenomenon? It was hard to believe. However, we had recently perfected a very sensitive and complex device which now proved of enormous value. It had the faculty of instantly determining the location and exact power of any intelligence within a certain distance. We placed it in the room with a piece of aura-surrounded metal, with astounding results. The instrument showed that the weird green metal had actually assimilated and taken for its own the intelligence of the deceased animals, and was literally a metal brain, an inanimate substance possessing intelligence. You can imagine our wonder and ecstasy. We had the power to create a brain so colossally powerful that It might solve all the riddles of the universe—so omnipotent and enduring that It might solve all the problems of mankind, and yet be a slave and not a master.

"With that in mind, we immediately set to work, and, using all the metal that remained potent, made the brain you see before you. We have fed It animal brain until It is the greatest intelligence in existence."

The Monster Attacks

THERE was no triumph in David Markham's voice as he spoke the last words. His tone was flat, and he stared moodily at the floor. As for me, my incredulity had faded and broken before the quiet recital of this towering discovery by an undoubtedly sane man. Only curiosity remained to

"And have you received any information of importance from It?" I asked.

James rose to his feet nervously. "There, my boy, lies the problem. The Thing is no longer our slave, as David said. It can communicate—we have provided It with means, and It has done so—but now, for a month, it has absolutely refused. It has become malevolent and treacherous. Lately It has

developed a peculiar ability, which we cannot understand, which enables It to expand or retract Its aura a foot or two. Twice the green mist has suddenly extended in vain attempts to reach David or myself when we happened to venture too close. And now It exhibits, in your case, a heretofore-unknown ability to draw toward Itself living beings beyond Its supposed influence. In all seriousness, I believe the Thing's keen intelligence is plotting the conquest of all human intelligence. I believe it should be destroyed!"

"You know as well as I," said his brother, "that our experiments can never be repeated if we do that. No, I think there is some easier way out of the predicament than that. At any rate, we must not act hastily. I suggest that we barricade well all entrances to this room and then retire. You are suffering no ill effects from tonight's mishap, King?"

"I am not aware of any," I answered; "But tell me, have you no theories concerning the nature of the green metal and its strange power?"

"On the contrary," David replied, "we understand the phenomenon fairly well; which fact, however, does not aid us in our present quandary. It shall be explained to you in detail when you have become sufficiently advanced in your studies."

But that was destined never to be.

In the days that followed, nothing further was said or done concerning the destruction of the diabolical metal's power. Entrance to the room containing It was no longer denied me, and I saw Its now repugnant green frequently. Familiarity, however, bred no contempt.

Every day seemed to reveal to me some new and incredible invention. *Markhamite*, the terrifically powerful explosive, and the crystal-mirror—but the latter plays so important a part in this narrative that I had better start at the beginning.

In the morning, fourteen days after that memorable night, I left the hangar after a jaunt in the plane to find, at a point near the straight-rising cliff of the mountain side, and perhaps a thousand yards from the house, David Markham, who was staring intently at a device before him. It was a huge upright mirror, ten feet square and made of a peculiar, crystal-like, transparent substance. Encased mechanism was fastened to the back. David frequently walked around to the rear to make adjustments, and spoke tersely into a small field telephone. As I came up behind him, I was surprised—my capacity for amazement existed no longer—to find apparently reflected in the seeming mirror the apartment of the metal brain, which was a thousand yards distant! James Markham was seen to be sitting at an instrument board against the wall, speaking to his brother on the telephone.

When David saw me beside him he said: "It is a vision-at-a-distance machine; something like television. James is having trouble at his end. Stay here, please, and do as you are instructed over the phone. I shall return in a short time."

So saying, he strode off toward the house. Presently he came within the field of vision of the instrument before me. Together the brothers worked over some bit of mechanism.

I started. Something, somehow, seemed suddenly radically wrong in that room. Then I let out a wild shout, and my scalp prickled, as I became abruptly conscious of the horrible truth. That green, luminous mist, the metal monster's hands, was creeping forward, like a stalking leopard! I snatched up my phone in a frenzy. David listened, whitened, and swung about, clutching James' shoulder spasmodically. Upon the instant the aura swirled forward, fast as light, and enveloped them. They tried to run, but could not, and tottered forward weakly. James slid to his knees, tried helplessly to fan away the vapour; then hurled at the demoniac metal, with his remaining strength, a small hammer he held in his hand. David, more sagacious in an emergency, reeled, then crawled, armed with a pair of wire snips, toward the wires connecting the metal to its batteries. It was useless—half-way across the room he fell forward on his face, quivered, and lay still! James too had collapsed.

I stared at the scene for a moment, horrified. Then I turned and dashed for the house, with a vague idea of warning the servants. When I was within sixty feet of the porch, I saw, through the open door, the giant Franz, with his frail wife across his shoulders, come leaping down the staircase. A dozen steps from the bottom the emerald mist slipped about him like a fog. He stumbled and fell the rest of the way; attempted to rise, clawing furiously against the Thing that was striving to suck away his reason; then the shaggy head sank back upon the already lifeless form of his wife. They were dead! They had succumbed much more quickly than the scientists; probably, I decided afterwards, this was due to the lower power of their intellects.

I stood, for a moment, staring in horror at the house whence green tongues, like flames, licked out and then drew back within the walls. For a moment only, however; then I was racing for the plane, a plan already formulating in my brain. There were five aërial bombs, filled with the terrifically destructive *Markhamite*, in the hangar. They were to have been tested that afternoon. The most brilliant of intelligences could not withstand that explosive.

To plan was to act. Five minutes later I was aloft with the bombs, the size and shape of large cocoanuts. I was cool, now that I was handling my beloved controls. As I came into firing position, I let slip a bomb over the edge, aiming as carefully as possible. Miss! It had gone over the cliff. The second blew a chunk out of the edge of the cliff. The third was a hit; it demolished part of the right wing, containing the living quarters, but that was not what I desired. The fourth was a miss. But, even as it struck the ground, I found myself looking down through the *green aura!* The Thing was extending itself to reach Its would-be destroyer! Even as I tried to rise away from the vapor, It was about me, and I felt myself grow weak and helpless. The

plane shuddered crazily, swung about and drove back again, almost out of control, but the vapor stayed with us. On the brink of eternity I managed feebly to get the last bomb to the edge of the cockpit and shove it over. Then I seemed to sink down deeper into the black oblivion that was enveloping me.

Suddenly I was again in full possession of my faculties, getting the plane under control. Then the noise of the explosion drifted up, and I gazed over the side to find the green vapor gone and the left wing of the mansion, containing the metal brain, utterly demolished. I breathed a fervent prayer of thanksgiving. The metal intelligence was destroyed, never to raise Its ugly threat to mankind again.

That was the end of the Markham case, the strangest in history. Of course, there was my trial for the murder of the brothers and their servants. Strange and insane as my recital of the events at the mansion seemed, I was acquitted. There was the testimony of the three farmers, honest men in their community, who, when driving along the road at the foot of the mountain, had seen a towering column of luminous, green mist suddenly shoot up from "The House on the Mountain" into the sky, to envelop a lone airplane, which had unaccountably begun to waver in its flight. With the fifth explosion they had seen the green column disappear as if it had never existed. And there was the testimony of the men, doctors among them, who had found the bodies of Franz and his wife (uninjured, curiously enough, by the explosions) and had been strangely frightened when they saw in the dead eyes that horrible look of stark terror of the unknown.

But none of them quite believed my story. I do not suppose anyone ever will.

THE END

The Human Termites

(*Continued from page* 549)

courage than that fighting did. Suppose they are dead? Things are quiet in there."

Just then two of the women came out carrying little, funny little crying bundles in their arms.

"You must be congratulated," they cried: "Here are two of the finest girls you ever saw and their mothers are inside waiting for you."

"More girls!" exclaimed Bankerville.

"My child a girl?" cried Fry.

The two men looked at each other. Then they started to smile:

"Just what I wanted, Bailey," said Fry.

"Me too," cried Bankerville: "I would have been disappointed had it been a boy. We'll be mighty proud of those girls some day."

"Hell's bells!" said Fry: "Proud of them some day? Why, I am proud of my girl right now. I am not going to wait till she grows up."

The next ten minutes were spent telling their wives what fine daughters they had and how proud the fathers were of them. Not a word about anything else. Finally Souderman walked in, proud as he could be, telling everyone that he was a double grandfather.

He bent over each young mother and kissed her on the cheek.

Susanne smiled.

"Grandpa," she said, "Just what does my little girl look like?"

"As far as I could see, she looks like a little human termite," was the unexpected reply.

Just then the doctor came in.

"You men had better go now. I cannot have anything happen to my patients. We have to keep them well in every way. There is work to be done; we have to start a new nation.

"Well, we four have done our part towards it," said Adam Fry.

THE END

The Stellar Missile

(*Continued from page* 513)

kin, my father, the stormy publisher of the *Bulletin*, agreed with me that Dr. Farrington's secret was one to be cherished until the end of his days. Now that he is gone, that time has arrived and I feel that the world ought to know to just what extent he actually went for the advancement of science. By it the world might cherish his memory and write his sacrifice down in history, with his ideals and astounding achievements. As for Tom Farrington—he is following in the footsteps of his father—working tirelessly that humanity might suffer less!

Everyone knows what became of the Stellarites. But for those who might have overlooked the newspaper accounts, I will recite briefly that the Stellarites were given decent burials in a great block of concrete and laid to rest forever in the bowl of Meteor Crater—there to sleep the slumber from which there will be no awakening—like horned-toads living helplessly for centuries entombed in hollow stone formations—!

The great interplanetary ship which brought them to this globe on their mission of destruction, rests in its own grave, while parts of it adorn the main floor of the Scientists' Club where they remain as a tribute to its discoverer, Professor Philip Brandon!

THE END

The Gold Triumvirate

(*Continued from page* 521)

SECRET OF MAKING GOLD
BELIEVED DISCOVERED!

Disgruntled Employee of Universal Gold Merchants Reports That Gold Is Manufactured. Governor of Bank of England and Governor of Federal Reserve Bank Will Send Investigators.

The article went on to relate that Mr. Kingsbury, business manager of the company, was believed to be in New York, and that he could not be reached.

As I started to eat my breakfast, I wondered where Kingsbury was; and whether the newspapers would be able to reach him at all. It was then that I realized that my work for the time being was over; and as I looked at my grapefruit I had a vision of a grove of grapefruit trees, and tropical surroundings, and of sunny South Sea Islands. A great longing for a long, lazy vacation in some faraway tropical clime beyond the marts of trade took possession of me.

I said to myself, "Well, why not, I have worked hard, and I have earned a bit of time off."

So I bought a ticket and a stateroom on the first steamer going South, and then gave orders that my bag should be packed, and that newspaper men should be told I couldn't be reached. I wondered if Tom had also joined the ranks of those who couldn't be located. I took a few diamonds, a small quantity of gold coin and some bills, and started on my vacation.

On board the boat we continued to receive radio reports from the city and from these I gathered that it had been quite generally accepted as a fact that gold had been manufactured in large quantities, at negligible cost.

People had rushed to the banks in such numbers, all over the world, to withdraw their funds, that most banks had been compelled to close their doors; and a world-wide moratorium had been declared.

There had followed such an orgy of buying for cash, that anything offered for sale had been snapped up at once, almost regardless of price, until values had become so inflated that money of all kinds was practically worthless.

Then, in the last report there was an announcement that the governments of the United States, and Great Britain had appointed a joint commission to decide upon a new medium of exchange, and establish a new standard of values; and, if necessary, an entirely new system of currency.

I was so sea-sick at the time that this news didn't interest me much; and the next day I transferred to the tramp steamer that brought me here. So of course there were no more reports. I managed to get a newspaper, however; and since I have been here on this delightful island I have read it over several times, and I am wondering how it will all turn out.

In the meantime, I should like to know just how much land I own, and whether stocks, bonds and public utilities are depreciating very much. I suppose I will be able to cash in on my diamonds, and have enough to live comfortably.

All this gold has got on my nerves. It's gold! gold! gold everywhere. My dreams are haunted by the glint of it; and I have little fleeting visions of the stuff before I go to sleep; and even here on the beach at night I see it, or seem to see it.

I followed the direction of his gaze, as he looked out over the water. Waving his hand in an inclusive gesture, he asked earnestly, almost fearfully it seemed: "Do you see what I do?" While we had been absorbed in his story the twilight had faded, and the moon had risen in such serene splendor as is seen only in the tropics.

The little waves of the lagoon that always mark the pulse of the great ocean were rolling quietly onto the beach and seeping back with a calm, respiratory rhythm that one really senses only as sound, but that often creates the illusion of movement. And one fancies that he is riding up and down with the beach and the ocean on the bosom of the sleeping earth. But if the bay was in a sleeping mood, she was in anything but sleeping attire. Indeed she was bedight in gala garments never surpassed by a bespangled star of the stage, or a queen in her royal sequins.

Every little wave rolling inland was laden with phosphorescence which intensified the beams of the moon and reflected them in beautiful glints of golden light. These little scintillations were momentarily appearing and disappearing with the ever-changing angles of the reflecting surfaces, like a myriad of airy dancers, or sparks at sport with the wind.

Some of these tripping little flames seemed to flit along the front of each miniature roller as it spent itself on the sand and then, leaping into the ambient air, mingled again with its playfellows wherever it chanced to alight.

This was not a new experience to me. I had enjoyed it often before on tropical shores; but familiarity had never lessened the wonder of its appeal.

For a long moment I sat gazing at the beauty of the scene; lost in the spell of its charm. Then, remembering my companion's query, I hastened to reassure him. "Yes," I said, "I see it. This, my friend, is not an hallucination. This is a gift of the Gods."

"It is," he murmured wearily, leaning back. "I think I'll buy this island and finish my life here."

THE END

Science News of the Month

ASTRONOMY—METEOROLOGY

STARLIGHT LOSES NO ENERGY THROUGH SPACE

Dr. Henry Norris Russell, writing in the *Scientific American*, on the phenomena of starlight states that there are three main sources of "starlight." These are the telescopic stars invisible to the naked eye; diffuse matter, probably meteoritic, scattered through interplanetary space and illuminated by the sun; third a faint, permanent auroral glow which arises in the atmosphere. Five-sixths of the light on a clear moonless night, he says, as indicated from the work of van Rhijn, comes from the diffuse matter and glow in the atmosphere. Thus, if it were possible to get beyond the earth's atmosphere and the sun's attendant fog of scattered meteorites, we would find the stars standing out on a far blacker background than from the earth. There is no evidence, he says, that light is weakened in its passage through space. Although it spreads out, the whole amount of energy suffers no perceptible diminution after a journey of a million years. But he says, whether the light goes on forever is beyond the power of science to answer.

COMET OBSERVED OVER RECORD PERIOD

In the continuous observation of Denning's comet since its discovery on March 10, 1927, by Prof. C. L. Stearns of Wesleyan University, a new record has been established, says Prof. George Van Biesbroeck of the Yerkes Observatory in *Popular Astronomy*. This record is not dimmed by the observation of Barnard's comet of 1889 which was seen 31 months after its discovery. For in that case there was only a single isolated observation. Stearns' comet, seen by Dr. Van Biesbroeck with the 40-inch Yerkes refracting telescope, appeared of the 15th magnitude, thousands of times too faint to be seen with the naked eye; and was 700,000,000 miles from the sun—nearly as far as Saturn's orbit. This comet shares with Neujmin's the distinction of coming no closer to the sun, at its nearest approach, than a distance nearly four times that of the earth.

PLANETARIUMS TO BE ERECTED IN AMERICA

The first "planetariums," or artificial star-lit skies, in America are to be constructed shortly in Chicago and Philadelphia, says the *Scientific American*. Europe—especially Germany, where the idea of the modern planetarium originated—has numerous cities possessing them. The planetarium is nothing more or less than a reproduction of the universe with mechanical controls. The sun rises and sets on the dome like the real one; twilight comes on; and a glorious, star-lit night appears, the stars shining with an intensity that one rarely sees in the real sky. In the planetarium one can observe the heavenly bodies as they appear from various parts of the earth. By simply pressing a button, the aspect of a tropical sky may be had, or, if desired, the stellar arrangement may be viewed as it appears from the North Pole. This is effected by a projector placed in the center of the room and which shoots to the dome above this, invisible pencils of light representing the constellations in their proper lo-

ASTRONOMY QUESTIONS MAN'S PLACE IN UNIVERSE

The great discoveries in astronomy, that are constantly widening the boundaries of our known universe, are causing the question to arise, as to what man's place in the cosmos really is, says H. Gordon Garbedian writing in the *New York Times*. Man's place in a vast universe seems to be made smaller by his new conception although intellectually he takes on added stature. The knowledge of our universe has extended its limits a thousand times the size of the known universe fifteen years ago. Man certainly by his new knowledge loses the feeling that he is the center of creation. "I think it would be a very rash presumption," says Dr. Harlow Shapley of the Harvard Observatory, "to think that the whole creation has been staked on this one planet alone and that nowhere else in the cosmos has nature repeated the strange experiment that she has on earth." Man, it seems, is constantly adding to his conceptions of the world that he lives in and he will realize ultimately that, although important on his own planet and perhaps in the solar system, he is infinitesimal when the vast cosmos is considered.

NEUJMIN'S COMET APPEARS TO HAVE BROKEN

The observation of a strange object in the skies recently, close to Neujmin's comet and travelling persistently in the same direction as the comet, leads astronomers at the Lick Observatory to believe that the comet may have split into two parts, according to *Science News-Letter*. They concede, however, that the stranger may be a tiny planet or asteroid. The comet was travelling in the constellation Aquarius. This is not the first time that a comet has divided; for there is the notable instance of Biela's comet, found in 1846 to have split in

KITES AND BALLOONS STILL USED IN AEROLOGY

There has been no radical change for the past twenty-five years in the methods employed in upper-air research, according to *Popular Mechanics*. Kites and balloons are still used in aerology to study conditions in the "upper" atmosphere. Pilot balloons are released for the study of the winds and their course is followed through a theodolite. Sounding balloons equipped with delicate instruments still measure barometric pressure, temperature and humidity. Airplanes equipped with proper self-registering instruments are sometimes used for obtaining this information, and, of course, give quicker results; but balloons can reach greater altitudes. Experimenting is being carried on by Prof. R. H. Goddard, of Clark University, with a new type of rocket, which will carry appropriate apparatus and will reach even greater heights than a balloon.

The observations made by the instruments in the balloons indicate that the earth's atmosphere is divided into two layers.

AVIATION

"THINKING MACHINE" AIMS GUNS AUTOMATICALLY

To combat the growing menace of airplanes in time of war, by increasing the effectiveness of anti-aircraft guns, the ordnance department of the U. S. Army has developed what is called a "thinking machine," says *Science News-Letter*. The device consists of two telescopes which are kept trained on the attacking plane by operators. One follows the horizontal and the other the vertical movement of the target. By means of gears these two movements are combined to give a resultant motion, and thereby a direction-setting which can be transmitted to the guns. Other operators, manipulating control dials, feed into the machine other necessary data; such as the range and altitude and corrections for wind and other atmospheric conditions. The instrument's setting is transferred to the guns by an electric cable. A synchronous motor mounted on each gun translates the instrument's data into movements of the gun carriage; whereby the muzzle of the piece is trained on the target, with enough "lead" so that a shell fired will arrive at a certain point at the same time that the plane does. A battery of high-angle guns can be operated by the machine with the assistance of a few highly-trained operators and the guns will be firing within thirty seconds after the range is determined. The cannoneers will not need to see the target, for they may be hidden in woods and separated from the machine by as much as half a mile. It is believed that several batteries of guns may be operated by one machine and thus a great concentration of artillery can surely welcome any invading aircraft.

SPEED RECORD OF 226 MILES AN HOUR MADE BY BRITISH PILOT

A new world record for speed of human travel was made by Squadron Leader Augustus H. Orlebar, in the supermarine plane Rolls-Royce S-6, when he attained an average speed of 357.7 miles an hour over a three-kilometer course on Southampton Water, England. This caused Isitt to fly 25 miles the record of 322.6 miles an hour made by Flying Officer Richard Atcherley in the 1929 Schneider Cup race; and is 39 miles an hour faster than the official record of 318.6 miles an hour established by Major Bernardi of Italy last year. Orlebar is said to have complained of a 15-mile side wind which delayed him, and also stated that he had on other occasion flown faster than 350 miles an hour on a straight course.

Several times Orlebar dived, meteor-like, from a 1,500-foot level to gain speed and, dashing past all objects, he made the fastest moving thing about him seem motionless. The record made by Orlebar came just after Flight Lieutenant Stainforth had also broken the previous record with a speed of 336 miles an hour.

ZEPPELIN TRIP SHOWS NEED OF AIR PREPAREDNESS

The flight of the *Graf Zeppelin* across the Pacific in three days has reduced that once "boundless expanse of water" to a "narrow strip," says the *New York Sunday American* editorially; and it has placed before us the urgent need of protecting ourselves from attacks from the air. Once, we considered that oceans on either side of us were reasonable safeguards from attacks in case of war. But ships like the *Zeppelin*, capable of carrying tons of explosives, and having very wide cruising ranges, bring within possibility the destruction of our cities by enemy invaders. The editorial asks for the nation an air fleet second to none. The government should itself develop aviation, instead of relying on private initiative and should have a fleet of aircraft so large that nations would hesitate to attack us and always be in fear of reprisals by us if they went to war with

BIOLOGY—EVOLUTION

MODERN MAN SUPERIOR TO ANCESTORS

Darwin P. Kingsley, President of the New York Life Insurance Company, writing in the *New York American*, avers that we are supermen in comparison with our progenitors, no matter what members of by-gone "golden ages" may be considered. Man's field of operation has largely shifted to the laboratory and, Mr. Kingsley says, "its high priests have been Edison, Pasteur and Marconi; who together have done more for the comfort and progress of the human race than all that was achieved by the geniuses of Egypt, Greece and Rome combined." As a result of scientific effort and better hygiene, a much smaller proportion of the race dies in infancy today than formerly. Mr. Kingsley believes that, by proper development of our brain power, it will be possible in seventy calendar years to live 1,000 years in terms of achievement, and that, measured by that standard, even today, the average man probably lives twice as long as his ancestors did a generation ago, and five times as long as his progenitors of two centuries earlier.

EXTRACTS TO AID PRE-NATAL HEALTH

As a result of experiments on certain organs and animal reproduction, conducted by Dr George W. Corner, head of the department of anatomy of the University of Rochester's School of Medicine and Dentistry, announcement has been made of the discovery of two extracts which may prove of great assistance during the period of pregnancy in assuring the healthy development of the embryo. These extracts are derived from the *corpus luteum*, which forms in the ovarium of all animals (including humans) whenever an ovum is discharged from the ovary. Dr. Corner, according to the *New York Times*, says that "the *corpus luteum* acts as an organ of internal secretion, forming a substance which acts upon the uterus in such a way as to prepare it to nourish the growing embryo. Frankel, a German gynecologist, showed about 1920 that removal of the *corpus luteum* from female rabbits prevented the development of their embryos." This discovery will, it is thought, be helpful in alleviating cases of human sterility; although it would be unsafe to administer these extracts to human beings, in the present stage of experimentation.

MUTATIONS CAUSED BY EARTH RADIATIONS

Experiments conducted on invisible short-wave radiations, similar to those given off by radium, have caused two University of California experimenters, Dr E. B. Babcock and Dr. J. L. Collins, to believe that rays from the earth may be the exciting cause of evolutionary changes in plants and animals, says *Science*. These experiments follow those previously made when heavy doses of X-rays were shot through germ-plasm tissues of animals and plants, and wholesale production of "mutations" was effected. Inasmuch as the earth gives off rays similar to X-rays, it is believed that the same effects would be produced. The method used by the experimenters was to expose genetically-similar strains of fruit flies in two different localities, one of which had more earth radiation than the other. After five months of fly-culturing, the experimenters found that the area which was more highly radiant caused twice as many mutations in the flies as did another location which is not quite so radiant. The experimenters conclude that earth radiation has played and is playing an important rôle in the great drama of organic evolution.

SOUTH AFRICA CALLED CRADLE OF MANKIND

Alonzo W. Pond, assistant curator of the Logan Museum, Beloit, Wis., who has recently returned from exploring prehistoric sites in Algeria, believes that South Africa was the site where man originated. This conclusion was arrived at from an intensive study of the migratory routes of prehistoric man, as well as of fossil remains of apes bearing a close human resemblance. These were unearthed in the Sahara, and seem to indicate that primordial mankind moved northwards along the valleys of the Nile and Niger, thus reaching the Sahara; from which Europe and Asia Minor were gradually peopled. The indications are that the Sahara was far more moist in those days than it is at present. As further evidence that South Africa may be considered the cradle of man, Mr. Pond mentions the fact that to this day this section is the home of the chimpanzee and gorilla, the nearest types of the animal kingdom resembling man.

ACTUAL MOVIE OF LIVING CELLS

Dr. Alexis Carrel, experimental surgeon of the Rockefeller Institute for Medical Research, has appropriated the movie to an unique and important use. In lieu of the scientist's eye, he added an automatic motion-picture camera to a microscope, and has been able to film the behavior of living cells of body tissues. This film was recently shown on the screen in New York City to five hundred physicists who had been attending the Thirteenth International Congress of Physiologists. It recorded the convolutions of the cells in their living state, and also the death of a cell in cancerous tissue. The only tests of such dimensions on the screen that their movements were easily followed from the rear of the room, a distance of *fifty feet*.

CHEMISTRY

CARBON DIOXIDE GAS TEMPORARILY CURES INSANITY

Temporary restoration of sanity to mentally-deranged patients was effected at the University of California Medical School by having them inhale carbon-dioxide gas, says *Science*. The experiments were conducted at the request of the late Dr. A. S. Loevenhart and Dr. Ralph M. Waters, of the University of Wisconsin. With the exception of one trial out of eight upon five patients suffering from "dementia praecox catatonia," the treatment induced a fleeting return of intelligence—lasting ten to fifteen minutes. The patients recognized their surroundings and returned sensible answers to questions asked them.

INCREASED MORTALITY CAUSED ETHER SEIZURE

The increased number of patients dying under anesthesia is believed to have caused an investigation by the United States Government, which has resulted in the seizure of anesthetic ether in several sections of the country. This ether, in possession of various wholesale drug concerns, was all manufactured by the same firm. There are five concerns in the United States manufacturing ether; and the name of the manufacturer of the seized ether is said to be known to the authorities.

WHY WATER IS FORMED

Dr. A. Keith Brewer and J. W. Westhaver, of the fixed-nitrogen research laboratory, Department of Agriculture, are working on solving the mystery why hydrogen and oxygen unite to form water. Their investigation established the fact that electrically-charged molecules produce the chemical action. This is brought about by electrically-neutral molecules being broken into electrons and positive ions. Because of the powerful fields surrounding them, these ions attach themselves to other molecules. This collection of molecules, when neutralized by picking up an electron, causes the reaction products to "split out."

In carrying on their experiments, the scientists duplicated as far as possible the chemical conditions found fifty miles above the earth's surface. They used a powerful electromagnet to get the magnetic conditions, and an evacuated tube to get the proper pressure.

CHEMISTS STUDY MATERIALS OF DRESS

In the *New York Herald-Tribune*, Dr. H. H. Sheldon, professor of physics, New York University, disclosed some interesting data concerning the psychology and materials used in dressing. Cotton is supplementing wool, he remarks, by reason of the fact that more cotton can be grown per acre than wool. Artificial silk made from pulp wood and corn stalks is rapidly coming into demand and, he says, natural silk will in time become a rarity. Experiments are being made to discover new plants that may be utilized in the manufacture of clothing; and in England a weed introduced from Guiana is being planted to obtain a substitute for cotton. Professor Sheldon also comments on the stockingless and "sun-back" styles adopted by girls, and believes that summer clothing should be used by them to protect the skin from the direct rays of the sun; because too much ultra-violet is harmful and besides, there is a danger of skin infections.

"Science News of the Month"

portrays in plain yet concise language every important scientific advance during the month. Nowhere can the average reader get such a wealth of accurate and vital information condensed into such a small volume. Some 42 scientific journals as well as a score of other sources are utilized by our editors in the compilation of this department. The publishers welcome short contributions to these pages from the various scientific institutions, laboratories, etc.

FROZEN CARBON DIOXIDE INJURIOUS TO WORKERS

The use of frozen carbon dioxide, or "dry ice," for commercial purposes, especially in ice-cream and dairy plants, is causing considerable injury to those who handle it with bare hands, according to *Science*. Numbness and pain in the fingers, [illegible] resulting in a form of eczema, is produced. So many claims for injuries incurred by those coming in contact with this chemical have been received, that the United States Government is issuing a warning to all such workers. "Dry ice" has a temperature of 110 degrees below zero, or 140 degrees below that of ordinary ice.

HYDROGEN FOUND TO EXIST IN DOUBLE FORM

What is considered to be one of the most revolutionary discoveries in chemistry was divulged before the American Chemical Society, recently, when K. F. Bonhoeffer demonstrated a proof of his theory that hydrogen, which has always been considered an indivisible element, is a mixture of two distinct substances. This discovery is supposed to be a verification of the wave-mechanics theory of matter, which is the only one accounting for radio-activity. Members of the Chemical Society stated that Bonhoeffer's discovery will be as epochal in chemistry as Einstein's theories are in physics. The experiment was performed by using ordinary liquefied hydrogen as a bath around a glass tube containing gas-soak charcoal. The liquid hydrogen bubbled and fumed, and the charcoal became colder and colder. Finally some hydrogen was passed through the super-cooled tube of charcoal and a fluid came out of the apparatus in one of the forms of hydrogen, called "parahydrogen." This differs from ordinary hydrogen in many of its physical characteristics; the other form is called "orthohydrogen," or "true" hydrogen. The wave-mechanics theory of matter, Dr. Irving Langmuir, president of the Chemical Society, stated, is understood by just as few people as understand the Einstein theories.

GEOLOGY

OBSERVATORY STUDIES OF VOLCANIC PHENOMENA EXTENDED

Dr. Thomas A. Jaggar, director of the Hawaiian Volcano Observatory at Kilauea, writing in the *New York Times*, gives some interesting information about volcanoes and the program of scientific investigation in obtaining additional data about them. Observatories in the past merely recorded eruptions, earthquakes, rainfalls and magnetic fluctuations. But the present-day observatory, Dr. Jaggar states, acts as an "earth detective," endeavoring to find from the crust of the earth whether the underground lava is rising, falling, moving sidewise or standing still. Dr. Jaggar states that the popular idea that volcanoes are always dangerous, and the most lawless and paroxysmal entities in nature, is wrong. The lava is rising and falling continuously in the craters of many volcanoes, while the ground a few miles away is trembling and tilting more than at other places, and these phenomena contain the fundamentals of "eruption." However, he says, from statistical research it has been found that a volcano may be expected to have dangerous and violent eruptions about once every 130 years. Steady surveying, with physical and chemical work at a laboratory, may be done on the very edge of an active crater.

GEODETIC SURVEY SEEKS DATA ON QUAKES

In an attempt to compile as much information as possible from many points of view, on the many minor earthquakes to which the United States is subject, the Coast and Geodetic Survey requests people who feel the earth tremors to report their experiences, says *Science News-Letter*. It wishes to know the intensity and duration of the quake, the effect on the walls, roof and floor, the effect on loose things about the house, etc. In this way they will be able to plot out the areas in which the quakes occurred and the possible direction of travel, in case the tremor moved over any distance. Associated with it in this study is the National Research Council, aided by Science Service.

EARTH CARRIES HUGE ELECTRIC CURRENTS

That the earth is a huge dynamo, generating electric currents in excess of 200,000,000 amperes, is the conclusion of Dr. Rene Gunn of the Naval Research Laboratories, writing in the *Physical Review*. Dr. Gunn's conclusions come from extensive research on the thermo-electric properties of the earth. Due to a curious complication of circumstances, there is a drift of electrons around the earth's axis of rotation; this drift makes an electric current. Dr. Gunn, however, does not believe that for the present, at least, any part of this huge supply of power is available to man. It will remain for future generations to unlock the secret of obtaining this energy, just as for the obtaining of the energy within the atom. The effect on our compasses, however, is also conditioned by the current circulating within the earth.

If, however, some means could be found to utilize this vast energy the utopia many men look for, the release of men from physical labor, will be brought a great step closer.

MEDICINE

BRAIN STUDY MOST IMPORTANT, SAYS PAVLOFF

Professor Ivan Pavloff, noted Russian scientist, declared at the recent Physiological Congress in Boston, Mass., that a study of the human brain is science's most important task. The betterment of our lives, with the consequent increase in human happiness, must wait on an increase in our knowledge about our behavior. We must start, he said, in our study of the less complex behavior of animals.

Dr. Joseph Erlanger and Dr. H. H. Gasser of St. Louis, Mo., described experiments whereby the travel of a nerve impulse has been recorded. The small electric charge carried by a nerve impulse had been amplified 100,000 times and observed on the cathode-ray oscillograph as a wavering line of light.

VITAMIN D PREVENTS RICKETS BY KILLING BACTERIA

Rickets is fundamentally a bacterial disease, caused by the poisonous products of bacteria in the digestive tract. Vitamin D prevents this distressing ill of childhood primarily by killing off a large proportion of these harmful microorganisms. These claims, differing radically from the concepts now orthodox in physiology, were advanced at the meeting of the American Chemical Society by Lester Yoder, chemist at the Iowa Experiment Station, Ames, Iowa.

Mr. Yoder was led to his conclusions by a study of the bacterial population of the intestinal contents before, during and after the administration of vitamin D. While his experimental animals were receiving the vitamin the bacterial count fell off markedly, but increased again when the vitamin was discontinued. For this reason the Iowa chemist suggests the possibility of using vitamin D as a means for the general control of the bacterial growths within us, as well as for the specific cure or prevention of rickets.

NORTH AMERICA HAS ITS OWN BRAND OF TYPHUS FEVER

That North America has developed its own particular type of typhus fever, is the contention of Dr. Kenneth F. Maxcy of the U.S. Public Health Service, according to *Science News*. This typhus, he says, occurs from time to time in certain states in the south; particularly Georgia, Alabama, North Carolina, Virginia and Florida, in which regions it appears identical with *tsutsugamushi*. Native white Americans, he says, especially those engaged in handling foods, such as groceries, meats, produce and food, seem to be more susceptible than negroes. The inference drawn from the studies is that rats or mice act as reservoirs of the disease with which man is infected through the bites of bloodsucking parasites.

"SOUND" WAVES START HEART BEATING

At the recent International Physiological Congress, held at the Harvard Medical School in Boston, Mass., Professor E. Harvey Newton of Princeton University described experiments by which hearts that were dead were caused to start beating again. This is a step in advance of the use of adrenalin and electrical stimulation to start hearts beating; for, in the recent experiments, the hearts were really dead.

A crystal immersed in oil was subjected to an alternating electric current. Next to it, in a vessel containing a solution, was a test tube; containing the heart of a frog in one case and a turtle in another. The electric current, causing expansion and contraction of the crystal, set up super-audible vibrations which reached the heart and started it beating.

These super-audible waves are similar to those previously used to kill fish; they have a vibratory frequency of 300,000 to 2,100,000 a second and are therefore not audible to the human ear.

Professor Newton did not predict the revival of the dead as a result of his experiments; for outside of other considerations, the body cells would absorb the waves before they reached the heart. But he does see a wide area of use for his discovery in stirring the contents of cells of living organisms and thus learning more about their composition, and also in sterilization by the breaking-up of bacteria.

PHYSICS

ELECTRON MOVEMENTS EXPLAIN AURORA MYSTERY

Attempts to explain strange green lines in the spectrum of the aurora borealis have generally met with failure, because physicists attempted to work out hypotheses on old conceptions of electronic structure in atoms, says Lord Rayleigh, famous British physicist, according to *Science News-Letter*. It was believed that electrons have only certain fixed paths of movement; such as might be illustrated by imagining a man inside a building to be an electron, and the building an atom. It was believed that the man located on the ground floor could move to the second floor and then to the first; but that he could not move directly from the ground to the first floor. Now Lord Rayleigh believes that strange movements of electrons, illicitly breaking through the ground floor to the first floor, have created the strange lines in the spectrum. These changes, previously deemed impossible, are now believed to be the only explanation of the phenomena.

VAST CHANGES IN STEEL INDUSTRY PREDICTED

Speakers before the National Metal Congress predicted radical changes in the steel industry through the treatment of steel by gases. Mr. Robert G. Guthrie of Chicago, vice-president of the American Society for Steel Treating, forecasts that although a vast amount of research [illegible] metallurgists, they will learn how to control gaseous atmospheres and there will be a great number of new gases utilized for the treatment of metals' inner structure as well as their surfaces. Dr. Ray Jeffries, president of the American Society for Steel Treatment, anticipates a metal harder and stronger than the finest steel, but which will be so light that it may serve most purposes, even replacing aluminum.

AGE OF STATUES REVEALED BY ULTRA-VIOLET

Attempts of art dealers to palm off skillfully worked-up statuary as ancient or antique work will be frustrated by the ultra-violet rays, according to recent experiments made by the Metropolitan Museum of Art and recorded in *Science News-Letter*. By detecting the true color of the marble, the ultra-violet will, with a great deal of accuracy, show how old the statuary is. In one case, after a piece of Roman statuary had been condemned, it was found by checking the records that it was the work of a modern who makes a practice of imitating antique sculpture. The experts of the museum, however, do not believe that the sole work of judging the statuary can be based on the results of the ultra-violet tests. They still caution the need of individual judgment to supplement what the rays reveal.

VOICE ENERGY PRACTICALLY NIL, SAYS SCIENTIST

Although the power of the voice over the human emotions is undoubtedly great, its ability to run any machine is practically nil, according to the experiments of Professor Vern O. Knudsen at the University of California. It would take the energy of 5,000,000 voices all talking at once to generate the mechanical energy equal to one horsepower.

TRANS-ATLANTIC TELEPHONE CABLE PLANNED

Experiments toward the development of a cable for transoceanic telephone service are now being made by the American Telegraph & Telephone Company, with the purpose of supplementing the telephonic service now being conducted across the ocean solely by radio. It is believed the use of a cable will not only increase the facilities and reliability of service, but insure absolute privacy in conversations; a thing impossible at the present with the radio. The cable will probably be a modification of the Permalloy telegraph cable now being used with great success in America. This contains a new [illegible] alloy which has increased the capacity for telegraphic communication to 300 words a minute, compared with 60 a minute in the old-style conductors.

RADIO-TELEVISION

RADIO STATIONS TO USE FILM FOR BROADCASTS

Instead of utilizing wax phonograph records to make many broadcasts of routine numbers, the stations of the Columbia Broadcasting System will employ celluloid films on which the desired sounds are recorded. The success of the sound-records on the films of talking movies initiated this idea, and the acquisition of an interest in the Columbia system by the Paramount-Famous-Lasky Corporation brought it into use. The stations of the system often have used, as fillers in the programs, records of speeches and musical selections, duplicates being sent to a number of the stations. Now it is believed that better audition will be obtained. The next step, it seems, will then be the full broadcasting of a talking or sound film; this will come about as soon as television reaches a higher stage of perfection.

RADIO WAVES PASS THROUGH ROCK

Dr. A. S. Eve, professor of physics at McGill University, Montreal, Canada, in collaboration with D. A. Keys and F. W. Lee, experimenting jointly in Mammoth Cave, Kentucky, under the auspices of the U. S. Bureau of Mines and the Geological Survey of Canada, have proved that radio waves of the frequency used for broadcasting are perceptible through at least 300 feet of rock, such as limestone and sandstone, according to *Science News*. Professor Eve previously had made experiments in the Mount Royal tunnel at Montreal, but was uncertain whether the waves penetrated the rock, or came through the entrance, or were carried along the rails and wires. It was for this reason that he transferred his operations to Mammoth Cave; as that contains no wiring or other continuous conductors. When using a superheterodyne receiver and 300 foot aerial in the cave, music was received from Louisville, Nashville and Cincinnati.

TELEVISION FOUND STILL IN EMBRYONIC STAGE

From a survey made of the progress of television in the great electrical laboratories of the country, Rose Wosten Bull, writing in the *New York World*, finds that it is still in its embryonic stage. Although quite a number of laboratories make regular broadcasts, some every day, not only is the range limited but the type of programs and the images that are sent are very crude. The Radio Corporation is still working with half-tones made up of over 4,000 dot-elements, while the Jenkins Company employs the silhouette. The reliable range of the Radio Corporation's broadcasts is about 10 miles and that of the Jenkins Company somewhat longer. None of the companies can yet make regular broadcasts of full-sized living images, as the apparatus necessary at both ends is entirely too cumbersome. Dr. Alfred Goldsmith of the Radio Corporation summed up the situation when he warned against expecting too much in the very near future. We are not yet ready to receive entertainment from television. What is necessary is a new method of broadcasting; and a receiver small, compact and inexpensive, so that the average man can buy it.

"TALKING MOVIE" TRANSMITTED BY TELEVISION

A fairly successful transmission of a talking movie by television was recently made in England by the Baird Television Development Company. The images of the film were analyzed, as customary, by the scanning disc at the transmitting end, and reproduced by a similar disc with a neon lamp at the receiving. The sounds were broadcast in the usual manner, being synchronized with the film, as lines on the film. This is the American "Movietone" process. The demonstration, however, was limited by the usual drawback that so far has hindered television, the inability to render the full details of any scene.

PHOTOS BY RADIO OR 'PHONE SIMULTANEOUSLY

The operation of a device called the *Fultograph*, which may be attached to any telephone line, and will transmit photographs simultaneously by radio or telephone, has been described by Captain Otho Fulton, its inventor. His device has already been accepted in England and is in general use in the British War Office, the Admiralty, the Air Ministry and Weather Bureau for broadcasting pictures of criminals, sending fac-similes of official orders, weather maps, etc. Four minutes are necessary to transmit a picture, which may be not only a fac-simile but also a half-tone; the receiver of the instrument turns out a finished picture. The set is portable and, according to Captain Fulton, may be housed in the rear of an automobile. It operates by producing an electro-chemical change in the colors of prepared paper at the receiving end.

GENERAL

KANSAS PROFESSOR MAKES ARTIFICIAL DIAMONDS

Artificial diamonds were promised the world by Prof. J. Willard Hershey of McPherson College, Kansas, speaking before the American Chemical Society.

The most promising modern attempts at achieving this much-sought-for end, Prof. Hershey said, were made about thirty years ago by the French scientist Moissan. Beginning where Moissan left off, the Kansas chemist is hopeful of eventually producing good diamonds in the laboratory. His process consists of melting pure sugar with filings of various metals in an electric furnace, and then plunging the white-hot mass into an ice-cold, saturated salt solution. The cooled mass is subjected to further chemical treatment, and then tested for diamond particles.

"I have not yet succeeded in all that I hope to accomplish," said Prof. Hershey, "but diamonds produced at McPherson College are the largest synthetic diamonds on record. It is no longer an unattainable goal to produce artificial diamonds in the laboratory, and it is believed that the difficulties that prevent the preparation of large and beautiful diamonds are only technical."

STRANGE HABITS OF FLIES

C. H. Curran, assistant curator of insect life at the American Museum of Natural History, writing in that institution's journal, *Natural History*, has revealed some peculiar traits of flies. The sanguinary characteristics of the "black fly," well known to devotees of the woods, have been always a source of great annoyance to trout fishermen, but that they attack fish is probably not generally known. Mr. Curran states that they have been known to kill even young geese. Each mosquito species consists of many varieties; the aquatic young of a certain species in the tropics have cannibalistic habits and live upon the young of other mosquitoes. Another species of fly probably not well known is one that lives entirely upon birds; they usually attack the bird on the neck. These insects are leathery in texture, extremely flat, and generally of a brownish color. Another species are parasitic upon young birds and often cause the death of a whole brood.

HYPNOTISM TO BECOME NEW SCIENCE

That hypnotism will eventually become a new science, just as chemistry and physics have become sciences, is the belief of Prof. C. L. Hall, of the University of Wisconsin, writing in the *Scientific Monthly*. He believes that the great rush toward making a practical application of hypnotism is now subsiding; and that in its place there will come a greater and more serious study of hypnotism as a pure science. It will be on the basis of this study that the further practical applications of hypnotism will be accomplished. Hypnotism will progress, according to Professor Hall, side by side with psychology, and each will contribute to the development of the other.

MAN NOT A CREATURE OF BEHAVIORISM

"It is impossible," says Heber D. Curtis, Director of the Allegheny Observatory, writing in the *New York World*, "to ascribe man's creative spirit to mere behaviorism"; to merely the chance chemical interaction of a host of carbohydrate molecules under self-created physical laws. The creative spirit in man, showing itself in his scientific and artistic productions, seems to imply a spiritual force which has an independent power of directing itself. If the soul is "merely a chemical action, a chemical flame—it is a flame which controls its own flaming." The soul he believes, like our physical universe, must possess continuity. It cannot be, he believes, that this rare thing merely lights up a physical body for a while and then dies with the body. Speaking of the possibility of the dead returning he quotes Rudyard Kipling:

"They will come back, come back again, as long
as the red earth rolls;
He never wasted a leaf or a tree; do you think
He would squander souls?"

He says further that our certainty about the continuity of our physical universe, that under identical conditions matter will react the same way—that the sun will rise in the east and set in the west—is only a good probability. There is nothing absolute about it. Neither is it always certain that two and two will everywhere equal four.

HOLES IN SUBMARINES PATCHED UNDER WATER

A new method for quickly patching holes in disabled submarines under water has been tested by U. S. Navy officials and pronounced successful. The device looks something like a pneumatic hammer, but employs charges of high explosive to drive steel studs through the shell of the sunken vessel, fastening an emergency patch over the rent. It is the invention of Robert Temple, of Denver, Colo.

The advantages claimed for the new submarine patcher are great speed in emergency operations, and ease of handling under water. The method now in use requires a comparatively slow-working air drill, dragging many feet of cumbersome hose behind it. The new tool drives a steel stud, three and one-half inches by one-half inch, through a half-inch steel plate at a single blow. It makes no noise, and complete safety for the operator is always possible.

STETHOSCOPE DETECTS FRUIT-FLY LARVAE

Laboratory experiments being conducted by the American Telephone and Telegraph Co. on an instrument to discover the existence of larvae in citrus fruits, may soon make it possible to successfully combat these pests. This instrument, which is said to resemble a doctor's stethoscope, linked up with batteries, vacuum tubes, amplifiers, microphones, etc., will make audible the movements of the larva in the fruit. Recent tests made with the instrument on grapefruit proved the theory correct and the fruits which the instruments indicated to be infected were proved upon examination to be so; whereas those which it showed as sound were free from larvae.

CAVE MAN'S BRAIN FOUND IN SIBERIA

A rare find of human brains, representing our ancestors thousands of years ago, has been announced from Odinsowo, near Moscow, in central Russia. The two petrified brains were found associated with the teeth of a woolly mammoth, and they are without doubt the very oldest fossilized human brains ever found.

It is reported that a commission of scientists has been selected to make detailed studies of these remarkable finds of man during the ice age when the huge mammoths and the rhinoceros were clothed with a thick coat of woolly hair.

Science Questions and Answers

On Stars and Universe

Editor, Science Questions and Answers:

Will you please answer the following questions and, if possible, give common examples?

1. What is a universe? You said in "Science News of the Month" it has a radius of 12,500,000,000,000,000,000,000 or a circumference of about 204,120,400,000,000,000,000,000 miles. What is outside of that?
2. What is a star?
3. What is a Solar System?
4. What is a Planet? Is there any difference between a Star and a Planet?
5. What is Arcturus?
6. I have heard a phrase "Arcturus and his sons." What does it mean?

Curtis Taylor,
102 Grove St., Utica, N. Y.

(1. The composition of a "universe" in the astronomical sense, is supposed to be as follows: There is first a solar system which may be a sun surrounded by its planets, or a sun without planets. Solar systems grouped together form a galaxy such as our Milky Way. Galaxies grouped together form a "universe." It is apparent that there is no standard size for a universe. The size given in "Science News" was for a particular universe. Universes, sometimes called "island universes," are separated as are individual stars by empty space. The sum of all universes composes our "Cosmos," which according to Einstein is "limitless but finite." In other words, we could go on eternally before reaching the extreme limits of it, but it has definite limits. What lies outside of it no one has yet conjectured.

The illustration shown here pictures the relationship between the various heavenly groups. Stars are grouped into planetary systems which are grouped into local clusters which are grouped into "galactons" or universes which are grouped into "cosmons" or super-universes, etc.

2. A star is any stellar body which shines with its own light, but generally used to designate one outside of our solar system.

3. A solar system consists of a sun, that is a relatively large stellar body, surrounded by one or more satellites that are revolving about it, held to it by its great gravitational force.

4. A planet is generally thought of as a large satellite of a sun, revolving about it in a relatively fixed orbit. Our sun has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. Naturally the distinction between a planet and a star is that the planet gets its light and heat from a sun while a star shines by its own light.

5. Arcturus is one of the brightest stars in the heavens, being believed also to be one of the hottest. It is therefore a giant sun. It has a diameter of approximately 22,000,000 miles.

6. The phrase alluded to appears in the Old Testament in the 38th chapter of the Book of Job and reads "Canst thou guide Arcturus and his sons?" Inasmuch as the means of astronomical determination possessed in biblical days was undoubtedly very crude, it is questionable whether any modern scientific implication can be drawn from the text.—Editor).

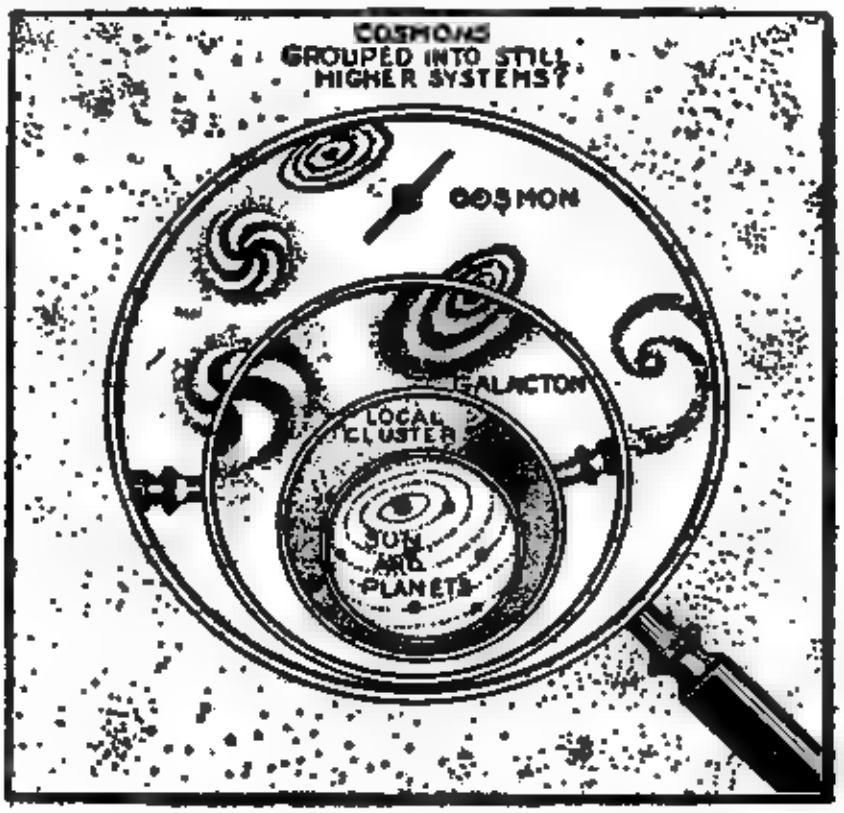


Illustration of the relationship between the various stellar groups. From Science News-Letter

Is Steel Really Solid?

Editor, Science Questions and Answers:

From reading "The Marble Virgin", "In Two Worlds" and "About Atoms and Electrons" in *Science Questions and Answers* I feel as if I know quite a bit about the subject of atoms. But one thing bothers me:

An atom has one or more electrons revolving at enormous speeds about the nucleus. Everything is composed of atoms. But if you take a piece of steel and you find it a solid mass, how can electrons move about when there is no space for them? Will you kindly explain?

Also, can you tell what is in the center of the earth? If there is no fiery material there, what makes volcanoes?

Hubert J. Leavins,
Morrison Hotel,
Chicago, Ill.

(From observation a bar of iron certainly appears to be solid. But our eyes, or even a microscope, tell us little about the real structure of the bar of steel. The electrons, the nucleus and the spaces in between them are so infinitely small that they cannot be detected by visual observation. If you will remember that there are estimated to be 200,000,000,000,000,000,000 atoms of copper in one ounce of it, one can appreciate the infinitesimal smallness of these quantities. No wonder iron seems solid! We cannot, as yet, tell with certainty what is in the center of the earth, although many ideas have been advanced. The theory of fiery gases in one which explains volcanic action; chemical combustion of various materials to effect an explosion of them is another theory. All that is needed to cause volcanic action is some highly-heated material (heated by any cause) and a fissure or weak spot in the earth through which it may pour.—Editor).

On Sound

Editor, Science Questions and Answers:

Kindly tell me how I can learn more about the physics of sound. Any books on Vitaphone and similar subjects will be helpful to me.

W. K. Logan,
212 No. Main St., Fostoria, Ohio.

There are any number of books of physics which will teach the elementary principles of sound. These can be found in the science section of your city library. For information on sound-motion pictures, there are a number of very good articles in the "Journal of the Bell Telephone Laboratories" which have appeared during the past eighteen months. The "Journal" can be perused in any city library or can be obtained from the Bell Telephone Laboratories, New York City.—Editor.)

About the Earth's Atmosphere

Editor, Science Questions and Answers:

In the earth's rotation on its own axis (which is some thousands of miles per hour) does the atmosphere surrounding the earth (for a distance of 50 miles) travel around at the same rate of speed, or does it remain motionless?

If the atmosphere were to remain motionless, there would need be a terrific friction which would sweep away everything. On the other hand, if the atmosphere travels with the earth, how could clouds drift against (in the opposite direction) the way the earth was turning?

Mortimer Nusbaum,
188 Rutgers St., Rochester, N. Y.

(The atmosphere does turn with the earth, just as the water in our lakes and mountains and seas does. Air is matter and matter is subject to the gravitational pull of the earth. Clouds do not drift through the air; they move only when a wind blows them. You might ask why an airplane can move through the air from east to west when the earth is rotating west to east. The cause is simply the force of the wind or force of the plane. The earth's atmosphere may be considered as a mass through which a body is moving. Another analogy is that of a man walking through a swiftly moving train opposite to the direction of the train. The train is the atmosphere and the man is the cloud.—Editor).

What is a Spectroscope?

Editor, Science Questions and Answers:

What is a spectroscope? How can it tell how far away the stars are? Will you tell me?

Barclay Kendall,
Utica, New York.

(A spectroscope separates light, by means of a prism, into its different colors, each of which has a different wavelength. It cannot tell the distance of a source of light; but it does show whether that light, like a star, is moving rapidly towards or away from us. This is because the lines of light move "toward the red" if the star is receding, and "toward the violet" if it is approaching us. This is like the change in pitch of the whistle of a locomotive passing us rapidly.—Editor).

(Continued on page 565)

The Reader Speaks

In this department we shall publish every month your opinions, after all, this is your magazine and it is edited for you. If we fall down on the choice of our stories, or if the editorial board slips up occasionally, it is up to you to voice your opinion. It makes no difference whether your letter is complimentary, critical, or whether it contains a good old-fashioned bawling. All are equally welcome. All of your letters, as much as space will allow, will be published here for the benefit of all. Due to the large influx of mail, no communications to this department are answered individually unless 25c in stamps to cover time and postage is received.

Is Man Made the Same as Woman?

Editor, Science Wonder Stories:

We have become so indebted to Mr. Gernsback for his work in introducing science fiction publications into this country that we most inevitably follow him in his publishing ventures wherever they may lead us. Now that Science Wonder Stories is established we are glad to go with him. As it is, this publication has already in the short period of three months exceeded his former suggestions; and it promises to become a greater one. We will have the pleasure of reading his wonderful editorials—editorials not of the ordinary type, but the kind that only Mr. Gernsback can write. They shine with information and his style is so pleasing that, sometimes, we wish the whole magazine were given to his compositions. We can only wish him success in his new publishing business. We also note that Mr. Paul is still working for him; that in itself is an asset that could not well be replaced.

I quite agree with Maurice Schumacher that the author of "The Reign of the Ray" showed prejudice against the Soviet form of government and preference to the Fascist. Had I been writing the story, I should have been prejudiced against fascism as established in Italy. But at the same time, having shown the idea, I would justify its imposition upon the reader by attempting to tell why. Fascism not only imposes an involuntary social status, but it enslaves the mentality and the physical being of the individual. Fascism is opposed to the advance of science (as is evidenced by the Italian Government's affiliation with certain elements which are vitally opposed to the progress of science) while Soviet Russia has made great scientific strides under the direction of the government. Excepting this, the story was excellent.

In the August issue appears a story by Dr. Keller entitled "*The Feminine Metamorphosis.*" Dr. Keller is an excellent writer and his stories are unusually interesting, but this particular story impressed me as being decidedly unfair and one-sided. As it was, the women were held down by the men and not allowed to be on a par economically with them. A discussion, employed by the men who were the financial magnates of the country, made them the women who are corrupting the finances of the country. The women were not engaging in any illegal enterprise, they were merely driving the automatic Efficiency. Due to the intolerance of the male sex, the only way that the women could secure their freedom in this instance was by the annihilation of the men. The women were well within the pale of the law, they planned no murder in their extermination of the male sex; they merely displaced the males with females. The unscientific part of the story centered around the speech by Detective Tates when he had the women trapped at their conference. He said, "——and you forget that he (God) made man just the same as he made woman." Is this science? If it is, I am not acquainted with it. I have made the study of scientific subjects my hobby for years, but never came in contact with a statement like that.

Is not Dr Keller familiar with the fact that at one time the female was the only animal in existence on earth? Some one might argue that two sexes existed always; of course, this is not the version of science as we know it. If that person will delve deeper into the study of evolutionary biology he will find that the female organism alone existed as such but was fertilized by the male sperm cell, and that this cell was a part of the female organism. According to this, it would appear untrue that "man was made the same" as woman. The male organism (which characterizes the sex) was of later derivation by the processes of evolution. When Dr Keller states that man was made the same as woman he is, in our estimation, making a mistake error. If Dr. Keller is right, will you please enlighten us on this point?

You have discussed, in the latest issue, under "Science News of the Month" the heading "Evolution." Does this mean that news of evolution will be discussed from the magazine; or that it will be incorporated in the future under the heading "Biology"?

John J Kelly, Jr.
1095 West 6th Street,
St. Paul, Minnesota.

(We believe, on rereading Dr Keller's words, that the phrase he put into Tates's mouth—"God made man just the same as he made woman"—is probably ambiguous because of the wording. What we believe Dr. Keller meant is that "God made man just as he made woman (they are both God's creatures)" and, therefore, that neither one should attempt the ascendancy over the other. Tates proved this belief by the way he divided his fate with his wife.

The subject of evolution, as it is so linked with that of biology, is considered under the same heading in "Science News of the Month." The heading is "Biology-Evolution."—Editor).

NOTICE TO READERS

Due to the great influx of letters, we were unable to print all of those received in this department. A great number of letters have therefore been printed in "The Reader Speaks" Department of SCIENCE WONDER QUARTERLY, which is now on sale at all newsstands.

Scientists Believe in a God

Editor, Science Wonder Stories

In carefully reading the October number of the Science Wonder Stories I find the following:

Cover:

Good! By closely looking at this cover, you can let your imagination run riot and can figure out a lot. Paul has made only one which did not quite jibe with me, but I attributed that to the fact that either he had been out the night before and his hands were not steady, or he was imagining that he was receiving a large pay envelope.

Editorial:

Characteristic of Mr Hugo Gernsback; very good, made for the heads of the lukes in the world.

Stories:

Only comment is that they are all good.

Reader Speaks:

"When We Become (civilized," by Stanley G. Seale, Indianapolis, Ind.

It is surprising that anyone can conceive the idea that, if all the rest of the world do not agree with him, they are not civilized, in fact are ignorant. Each of us is allowed to think as he chooses. If one wishes to worship a tin god, concrete god, coal god, or what-not, that is his privilege. Personally I am taking this statement that our greatest scientists are Atheists or Agnostics. I have no belief but that all of our great scientists are believers in a God, not necessarily one in our form, but a *creator*, a *master mind*, a *power*, a *force*. And, candidly, I believe that anyone who states otherwise, is only talking to hear himself talk. If Mr Seale will go out in the country some clear moonless night, where no lights will interfere, and look up in the heavens and watch the majestic parade of the constellations, and the planets, he will soon acknowledge that there is a God, a Creator.

Let's pass on to Mr. W. R. Mathews of Pressley, Mich. Shame on Mr Mathews! Now who would imagine that anyone who read our Science Wonder Stories would still believe in ghosts or spirits. The very idea that Dunninger is exists! There exist are to be still men in ignorant people, not for intelligent ones. You know fully well when a person "dies out," the undertaker makes an incision, withdraws the blood and injects formaldehyde. There is no chance of their ever saying "Hello!" *That's all there is to them, no more, no less. Finis.* But to think that churches are fighting the future—why, good, they should! For the reason that the so-called spiritualists and astrologers are only making a good living out of them like you who believe in this sort of bunk. Send me fifty cents in stamps, with a self-addressed envelope, and I will give you just as accurate forecasts as any of the others; yet, better. Mine will be true.

To those who are hungry for the knowledge of science: you have one *old friend Hugo Gernsback* and a great many others who will gladly explain to you any question pertaining to astronomy or physics. Your questions may seem foolish, but they will not look upon it in that way. Let us hear from you.

F. E. Bacon,
600 Jefferson Avenue,
East Point, Ga.

(On the whole, we would accept Mr. Bacon's idea that most real scientists believe in a God. It is the "professional" scientist, the man who is in a class with the "professional" parson, the "professional" theologian, the "professional" moralist, who should not be counted when the religious beliefs of scientists are questioned. It is often all too true that the "professional" scientists are the ones who make the most noise and therefore seem to be representative of their class. But the deep, sincere and penetrating men who are the real leaders in science are undoubtedly those who perceive such a reference in the universe, which man's mind cannot grasp, that they stand in awe of the vastness of the conception that created it all. Their reverent awe [not fear, but rather a respectful respect] toward the Creator is what might be called their religion.—Editor).

Who Pay For Cuisine

Editor, Science Wonder Stories:

Mr. Gernsback, if you sold 125,000 copies of Science Wonder Stories and, out of that eight-million, 124,997 of the reading public who read the material offered no opposition, why should a few critics of the "Brickbat" type destroy my chances, our chances, to have the privilege of reading a sequel to "The Martian Virgin," by Ronald MacDavid? Or, still better, a story such as "Warriors of Space"?

Indeed, I believe that it would be the better part of wisdom, as well as of courtesy to the authors, if those "brickbatters" should refrain from sending in such hand-filled, shamefully disgraceful criticisms as were published in the last numbers of Science Wonder Stories. I reserve, for such letter writers and intentionally harming critics one thing—pity.

I am practically positive that I am not alone in my thoughts, for I know that of my [illegible] Wonder Stories than I have [illegible]

(Continued on page 567)

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Questions and Answers

(Continued from page 863)

Source of the Sun's Heat

Editor, Science Questions and Answers:

(1) The theory that the sun produces heat by consuming itself slowly, seems unreasonable to me. Do not more facts go to show that there is only so much heat in the universe, as there is so much mineral matter? Could it not be possible that the sun is composed of the right elements to gather, absorb, and then reflect the heat of the surrounding part of the universe? The sun sends heat to the earth but the most part of it is radiated again into space.

(2) Could the sun spots be explained by the theory that the stars or the planets cast a shadow or interfere with the magnetic attraction of heat to the sun's surface?

(3) Isn't there a cycle of heat, as well as a cycle of life?

Donald Furst,
Traverse City, Mich.

(The idea that there is only a fixed amount of energy in the universe is correct. Heat, however, is only one form of energy. Therefore, it is possible for light energy, electrical, chemical and kinetic energy, as well as many others to be transformed into heat; or from heat into other forms. There need not be a fixed amount of heat; there need only be a fixed amount of total energy. Therefore, in the case of the sun, the energy radiated off as heat and light becomes transformed into other forms or dissipated. Heat goes to warm us, while light goes into the flowering of our plants, etc. The seeming limitlessness of the sun's energy is supposed to arise from energy released by matter being broken up. Elements of matter in the sun are changed into others with a release of energy in the form of heat and light. It seems rather far-fetched to search for the source of heat in other parts of the universe. For, no matter where it comes from, it must have a source. Our own sun is a good enough source for it.

2. If the theory proposed, that the sun's energy came to it from some other source, were true, then the explanation of sun-spots propounded here might have a little validity. But Mr. Furst should realize that the nearest star to our system is 4 [illegible] years away, whereas our system has a radius of only 4 light hours. Therefore the stars are only specks of dust in the vast cosmos and would have no effect one way or another on the sun. Sun spots are considered to be caused by the vast internal disturbances of the sun itself.

3. Thermodynamics shows there is a cycle of heat for all bodies, a detailed explanation of which is too technical for these pages. But, just as bodies nourished by food continue to grow until a certain point and then wear out or decay (the rate of which can almost be worked out mathematically), [illegible] receiving heat or losing heat obey definite laws. However, the two cycles have nothing to do with one another.—Editor).

Difference Between An Atom and Solar System

Editor, Science Questions and Answers:

Ever since I first saw a copy of your magazine I have not missed a single issue, but one thing certainly puzzles me. In all of the stories it is taken for granted that there is a gravitational relationship between the members of the solar system. I think that is impossible. I did a little experiment that makes me think I am right too. Now an atom is supposed to be composed of electrons, one of which is positive and the remainder negative. And our solar system is supposed to be similar to an atom. Correct? Well, in an atom the negative electrons repel each other; therefore theoretically all the members of our solar system (except the positive one) should repel each other. Now my question:

What is the matter with my idea?

P. R. Hoffman,
6570 Colgate Ave., Los Angeles, Cal.

(Mr. Hoffman has evidently confused a similarity in the structure of an atom and our solar system for an actually identical construction. There has been much misinformation and many wrong conceptions spread about atoms in the attempt to give a popular understanding. Some

(Continued on page 866)

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Science Questions and Answers

(*Continued from page 565*)

popularizers, in order to present a picture to the lay mind of what an atomic system looks like, have likened it to our solar system.

It is true that electrons do revolve about a nucleus in orbits just as planets revolve about our sun. But there the similarity ceases. Electrons repel each other because they have similar charges of electricity. They have negative charges and revolve about the positively-charged nucleus. [See SCIENCE WONDER STORIES, October, Page 464]. Planets attract each other because of the mutual gravitational pull in comparison with which their electrical charges are practically negligible.—Editor).

Do Bodies Vanish?

Editor, Science Questions and Answers:

1. The editorial on "Wonders of Speed" makes the statement that an object in motion reduces in length, according to the ratio of its speed to the speed of light. And you say it would vanish entirely at 186,000 miles a second. Now, if an object shrunk only in length, how could it be visible, except from a head-on view, as the head of a pin? Would it not be visible in two-dimensional forms?

2. The speed of light is supposed to be the fastest; nothing can go faster than light. According to Newton's law, however, it would seem that an object starting to fall, say from the earth, to a distant star, at the rate of 16 feet per second, would be traveling at a greater speed than light when it got there.

3. In the answer to a question in the September issue, you state that the maximum distance of Venus is about 63,000,000 miles. The year of Venus is about 266 days, I believe; so naturally the planet would be at one side of the sun, while we are on the other, at certain intervals. Thus it would seem that Venus would be at times about 121,000,000 miles away.

J. P. McDermott,
8834 Mich. Ave.,
Chicago, Ill.

Illustrating the positions of Venus and the earth at inferior and superior conjunc-

(1. According to the Lorentz-Fitzgerald contraction theory, at the speed of light the body would have a length equal to zero and would therefore vanish. There are no two-dimensional bodies; there are only two-dimensional surfaces, such as the flat surface of a table. Even a fine sheet of paper has a third dimension, although very small.

2. There is no such thing as a body falling freely from a distant star to the earth. The earth and the star each hold everything on its surface by gravity. Only in free space could there be the free fall suggested. But if it could be supposed that a body were out in space and only the earth existed and it started to fall toward the earth, it would gather no such tremendous velocity as imagined. If it were only 70,000,000 miles away its acceleration toward the earth would be at that time only 1/10,000,000 [illegible] per [illegible] second. In other words, the acceleration to the earth's surface would vary between that figure [illegible] 32 feet per second. It could be figured by calculus how much the velocity would be as a maximum. It is certain that it would be far less than the speed of light. The point is that going further and further away from the earth's surface would not add materially to the velocity because the earth's gravitational influence would be becoming smaller and smaller.

3. Mr. McDermott is correct in his assumption that Venus is at times more than 65,000,000 miles from the earth; this was a typographical mistake. At superior conjunction Venus is approximately 160,000,000 miles from the earth; while at inferior conjunction it is only 25,000,000 miles. These positions are illustrated in the accompanying figure. Superior conjunction occurs when a plane passed through the [illegible] the sun [illegible] through Venus on the other side of the sun. [At positions Earth 1, and Venus 2, in the diagram.] The three need not be in a straight line, inasmuch as Venus has an orbit inclined about 3 degrees to the orbit of the earth. Inferior conjunction occurs when a plane passed through the sun and earth passes through Venus on the near side of the sun. [Earth 1, Venus 1.]—Editor).

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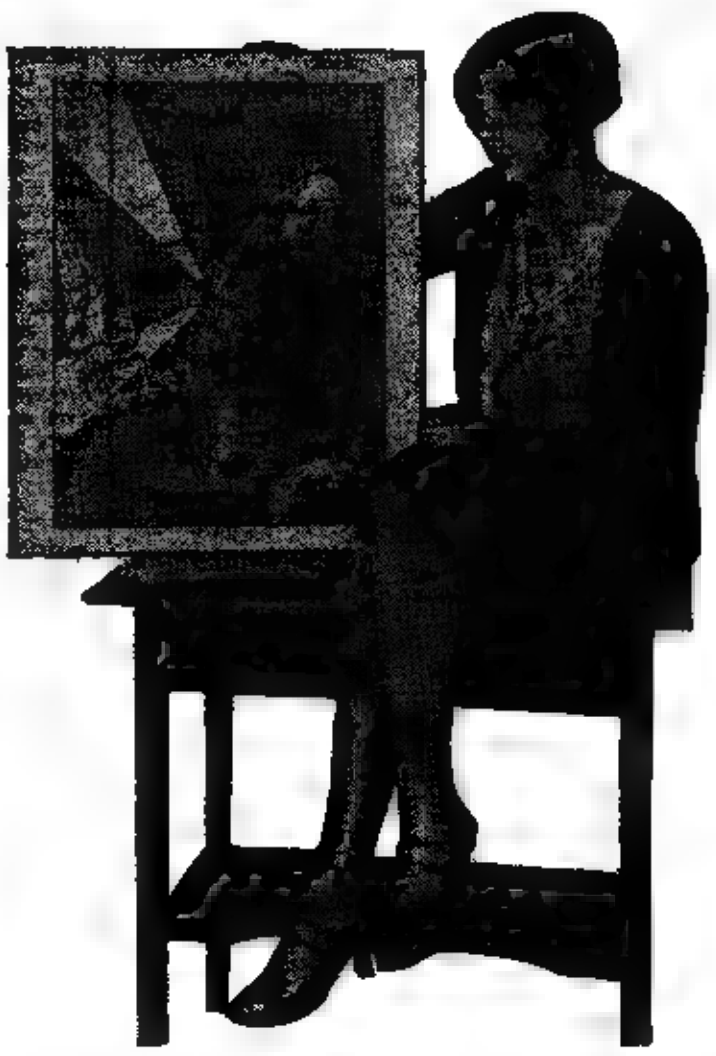

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The Reader Speaks

(*Continued from page 563*)

friended, each and every one liked "The Marble Virgin" as well as I. I know, Mr. Gernsback, that you should not, on account of only one or two out of one hundred thousand, discourage Mr. MacDowd from writing the sequel.

I, being in a more convenient position to send this letter to you, speak for four others: S. Anderson, J. V. Salter, Roy W. Ritchie and V. W. Stone, all neighbors.

I most sincerely hope that you have received epistles stating thoughts in a like manner. I have to date every issue of your new "Twins." Of all the stories that I have read in both, I enjoyed none more than "Radium Pool" and the "Marble Virgin."

George M. Ulysses,
336 Gaven St.,
San Francisco, Cal.

(We cannot agree with Mr. Ulysses altogether in his indictment of "brickbatters," despite the fact that the brick bats were directed against us. In the first place we asked for them; therefore we should receive them in the proper spirit. Secondly, we believe that criticism, as long as it is intelligent, is a very healthy thing for all of us. And we want to encourage it, just as long as someone has really something to say.

We have never ceased to defend the now historic "Marble Virgin". Despite the difficulty of the feat that was accomplished, the story remains one having an excellent construction, proper balance and a fine interweaving of the love and science elements. The sequel to the "Marble Virgin" has not yet been received [we understand from Mr. MacDowd that he is hard at work on it.] If the story is a good one we shall have no hesitation in publishing it.—*Editor*).

Do We Lead the Sheep?

Editor, Science Wonder Stories;

I must write in and have my say. I cannot hold in my indignation any longer. I cannot see why so much undeserved praise is showered on Dr. David Keller; unless it is that the people who write in are afraid to disagree with the editor. You (the editor) wax enthusiastic about Keller's work and your sheep-like readers follow you.

I have read everything of his you printed and, often, I re-read his stories three or four times, trying to find out what there is in them that you rave about. I figure it must be a case of, give someone a good name and everyone will pat him on the head. His ideas are good (most of them borrowed) but his stories are Rotten, with a capital R.

You must remember that your magazine is a fiction magazine and when we read fiction we want a good interesting story. When we read science fiction, we still want a good story with a scientific background. It is not enough to give us a good scientific idea, worked out in a poor story.

Outside of the stories by Keller, your magazine is perfect. I cannot say enough in its praise. For years I was literally starved for that type of fiction and now, every month, I look forward to a mental feast.

I notice that quite a number of people write in, knocking "The Marble Virgin" and "The Warriors of Space." They are both, in my opinion, excellent examples of science fiction. I can hardly wait until Mr. MacDowd gives a sequel to "The Marble Virgin."

You know, Mr. Editor, that you have quite a number of women readers and, although I cannot speak for all of them, still I can and do speak for a large group of them in Chicago. We eagerly read science fiction stories, but we like our stories to be flavored with the sugar of a good love element. Not too much sugar—you understand. We don't want them gooey; just enough to give them interest.

Mrs. Helen Ammons,
5200 Sangamon St.,
Chicago, Ill.

We must really protest against Mrs. Ammon's belief that we have unduly influenced our readers to a belief in the ability of Dr. Keller. In the first place, we favor no writers against any others. We believe that they are all good; else we would not print their stories. Our pride in Dr. Keller is in the humanity of his characters and the wide vision with which he tackles his ideas. His stories are, acceptedly, not excessively technical. He prefers to take a single scientific idea and work out its ramifi-

(*Continued on page 569*)

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The Reader Speaks

(*Continued from page 567*)

cations. We believe that Mrs. Ammons will admit that such a treatment has a distinct benefit. And truly, Mrs. Ammons, you should really admit that Dr. Keller is a master at handling love elements in his stories. He has them in practically every story. They are sincere and clean and never become "gooey."

Anyway, we think that our readers' feelings are hurt. They are too intelligent to be led astray by our own conceptions. We praised "The Marble Virgin" and "Warriors of Space" very highly and we have not yet unearthed ourselves from the deluge of brick bats that have been thrown.

Nevertheless we are pleased to hear from Mrs. Ammons to learn of her fine groups of fans. We would like to hear from her again and from her friends, especially to learn their reaction to the complete "Human Termites."—*Editor*).

Another Classification

Editor, Science Wonder Stories:

Having finished reading the September issue of our magazine, I write to give you my opinion on the stories. I place the stories in four groups:

(A)—A masterpiece of science fiction.
(B)—A very good story; a story I like to reread.
(C)—A story that is not as good as the former; a story I like only as long as *if* [illegible]
(D)—Stories not good.

Class A:
"The Alien Intelligence"—J. Williamson.
"The Human Termites"—(so far)—Dr. D. H. Keller.

Class B:
"The Radium Pool"—Ed. E. Repp.
"Warriors of Space"—J. P. Marshall.
"The Onslaught from Venus"—F. Phillips.
"The Menace from Below"—H. Vincent.
"The Boneless Horror"—Dr. D. H. Keller.

Class C:
"The Moon Beasts"—W. P. Locke.
"The Reign of the Ray"—Fletcher and Pratt.
"The Threat of the Robot"—Dr. D. H. Keller.
"The Making of Misty Isle"—S. A. Coblentz.
"The Marble Virgin"—K. McDowd.
"The Feminine Metamorphosis"—Dr. D. H. Keller.
"The Eternal Man"—D. D. Sharp.
"The Cubic City"—L. Tucker.

Class D:
"The Diamond Maker"—H. G. Wells.
"The Problems of Space Flying" was very interesting; give us more of that kind.
"Science News of the Month" is a success, worth the price of the magazine in itself.

The covers of our magazine are very fine; Paul has improved very much.

I impatiently await the first number of the Quarterly.

Herbert Scheffler,
Calle Trébal, No. 22, Col. Sta. Maria,
Mexico City, Mexico.

(We are glad to print without comment this classification of our stories from a reader in Mexico. We would like Mr. Scheffler's reaction on the Quarterly, which he should have already read.—*Editor*).

Tribute to Mr. Repp

Editor, Science Wonder Stories:

I believe that one of your best authors is Ed Earl Repp. His "Radium Pool" is one of the most remarkable stories that it has been my good fortune to read. He has ended it in such a way that a sequel can be written. May I add my pleadings to many others that he hurry up with it. You say that his "Metal World" is to be written in a style that will delight us; that probably Is A. Merritt's way of writing. Tell Mr. Repp that his own style is good enough. I found it very easy reading—in fact so smooth that I had finished the story, to my regret, before I knew it.

I read an article in the *New York Times* "Book Review" in which SCIENCE WONDER STORIES' sister magazine, AIR WONDER STORIES was mentioned. In it another story of Mr. Repp, "Beyond Gravity," was mentioned. I would like to hear from this author personally, also see more of his works in the magazine.

I am glad to learn that a story by Clare Winger Harris will soon appear in the magazine, the title "The Artificial Man" sets me to wondering what the contents will be like.

(*Continued on page 570*)

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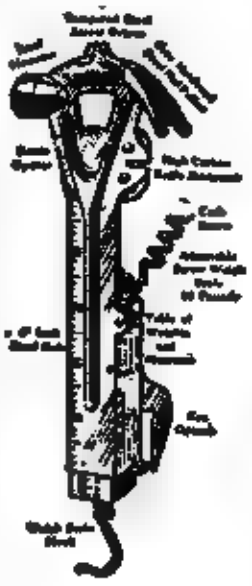

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The Reader Speaks

(*Continued from page 569*)

Of all the stories that you have thus far published, I have not as yet found a story for which I do not care. Get Stanton Coblentz to write some more for us; also don't forget to secure some of Edmond Hamilton's fine stories. And of course we can't forget A. Merritt and Jack Williamson with their wonderful descriptive literature.

Mr. Gernsback, will you please answer this question (I notice that when you answer some letters you leave some of the most important questions unanswered). ARE YOU GOING TO HAVE A COVER CONTEST? I've been longing to have some science story magazine come along with one; so we readers would have a chance to number as contributors to the magazine we enjoy reading.

I have bought all the pamphlets that have thus far appeared in the Science Fiction Library, and am impatiently awaiting the appearance of some more. I read all the stories immediately upon their arrival and it wasn't long before I had finished them and had nothing to read. So hurry up with some more, and this time put in a story by Ed Earl Repp.

Jerome Siegel,
10622 Kimberley Ave., Cleveland, O.

(The tribute to Mr. Repp, we believe, is well-deserved. He is gradually creating for himself a definite place in the front ranks of science-fiction authors. We are pleased to present in the present issues of Science and Air Wonder Stories two more of his stories that are new high marks in his achievements.

Mr. Siegel will undoubtedly be glad to note that the present issue contains a cover contest. We are quick to respond to our readers' desires; sometimes before the desires are expressed. We confidently expect that this contest will reveal a great amount of new talent.—*Editor*).

Dr. Keller Either a Genius or a Fool

Editor, Science Wonder Stories:

I am dumbfounded, completely flabbergasted, utterly speechless, so to speak. It is *"The Human Termites."* I saved this story until the last. It is good that I did. If I had read it a week ago I believe that by this time I would be a raving maniac. Moreover, if you don't rush that next issue I will be such regardless.

I say that I am speechless, in that words fail me to adequately express my opinion regarding this latest work of one of your associate editors. I really don't know whether to call Dr. Keller the greatest science fiction genius of all time or a diabolical fool.

But the fact remains that the first installment of *"The Human Termites"* has permeated my conscious self as no other literary effort has done. It is all I think of during the day and all I dream of at night. If more men can conceive of such today, where will tomorrow's channel of thought lead?

The theory of a Central Intelligence in the Termite colony was like a bomb exploded in my brain cells. But the emotionless Dr. Keller didn't stop there. He had to shatter my mentality with the second theory; that of a human Central Intelligence, with nations as colonies.

I believe that, once every few years, one man in every line of endeavor carries humanity over a high stepping-stone in the path that leads to the ultimate goal. I believe that Dr. Keller in the field of science fiction, has done that in *"The Human Termites."* I say this without knowledge of what disclosures he may make in the second installment. The first chapters were sufficient. Mighty is David H. Keller! Mighty is Hugo Gernsback, who incited the incomparable M. D. to action. Mighty is Science Wonder Stories, forerunner of the truth that is to come!

I believe that in science fiction success has been attained, thanks to such men as Keller and Gernsback. The trail has at last been blazed. Let us follow it to the end.

B. S. Moore,
Walhalla, S. C.

(It is true that, very often, it is impossible to distinguish the genius from the fool. In both cases, as Mr. Moore suggests, he throws a bombshell into our brains and leaves us dazed. It is only after much thought and meditation, and possibly after much time has passed, that we come to separate the genius from the fool. We firmly believe that *"The Human Termites"* will stand as one of the great landmarks of science fiction. It will serve for as one of the great stimuli to an awakening of our

(*Continued on page 571*)

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The Reader Speaks

(*Continued from page 570*)

people to the all-too-terrible insect menace. In his picturing of the giant termite warriors, Dr. Keller has used a method that is masterful. For, where a picturization of little single insects will stimulate us only to mirth, that of a giant warrior [which is the power of a great many insects] really awakens us.—*Editor*).

A Long Sentence

Editor, Science Wonder Stories:

Curtis Taylor is perfectly right, you ought to be sentenced to six or seven lifetimes in in paradise. Why do you have to go and print such a good magazine, anyway? 25c a month is an awful lot for a hard-working boy who only gets five dollars a week to pay. Your magazine is so good that I can't keep myself from getting it every month. I wish I could be strong enough to resist temptation.

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(Six or seven lifetimes makes a long sentence, even if it is in paradise. We are accepting the suggestion of our readers and in the future we will print the full address of our correspondents at the bottom of each letter. There has been, we are gratified to say, a great tendency of writers to correspond with each other, to exchange thoughts and ideas. We want to encourage that in every possible way. The full address of Jack Gordon is 298 Atkins Ave., Brooklyn, N. Y.; that of Frank K. Kelly is 2933 Paulo, Kansas City, Mo., the full address of Stanley G. Stolte is 624 North New Jersey St., Indianapolis, Ind.—*Editor*).

Repp In Class with Burroughs and Wells

Editor, Science Wonder Stories:

For three days now I have been thundering across the continent toward California, and for three days I have had little to do but read and write letters. As I near the California border and look out over the flat expanse of desert lands that lie on all sides as we cross the sand-dune jungles, I feel the urge to express my keen delight in your SCIENCE WONDER STORIES, two of which I purchased in Denver—the August and September issues—to read en route. Heretofore I have considered science-fiction something beyond the ordinary intelligence; but I have, as a result, denied myself the very best there is in reading matter. Three stories in these magazines have reformed me. I am now a devout science-fiction reader and, when I reach my home again, I intend to subscribe to your magazine at once.

The stories which I wish to thank you for giving me the best entertainment I have enjoyed in years are, "The Radium Pool," by Mr. Ed Earl Repp; "The Human Termites," by Dr. David H. Keller; and "The Onslaught From Venus." What really won me over, was Mr Repp's "Radium Pool." I began reading that one right off and, far into the night, I continued until I had devoured every word. That story, sir, is actually the finest thing I have ever imbibed in fiction. It is the ulti-

(*Continued on page 573*)

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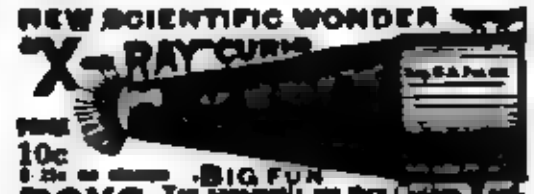

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The Reader Speaks

(Continued from page 571)

mate in excitement and fine American literature. And so we roll across the desert—not far from Death Valley—I cannot help but look out the window and imagine I see Driftin' Sands and his partner struggling across the Mesalava Plain! Even now I see a great streak of red tableland across the sun-baked desert. I can even see the Jovian space-flyer! Mr. Repp certainly 'knows' his desert. He describes it perfectly.

Thus far I have read a half-dozen excellent, high-class magazines. Despite its paper pulp I found SCIENCE WONDER STORIES as good as the best and 100 per cent. better than most! It is excellent. Dr. Keller tells a mighty fine story, as do all the rest of your writers. But I would suggest that you have your proofreaders be a little more careful in correcting typographical errors; as such things mar a good story. "The Radium Pool" was thus marred on several occasions; but it didn't lower the high level of the story. It would have been interesting even if printed on wrapping paper in pen and ink. I place this writer in a class with Edgar Rice Burroughs and H. G. Wells and others of the peak of the profession. Ed Earl Repp is without a doubt a "find"; although I believe I have read some stuff by him in the past—western stories—and I liked them. One was "The Border Paladin." If I remember correctly I read a book in England written by him. I'm not certain.

I trust that I will find future SCIENCE WONDER STORIES as good as the present. I intend to subscribe when I return to my home in Illinois. I must spend a month in California and western Mexico. Meanwhile I will buy it on the stands.

Jefferson Paramour,
Aboard Golden State Limited.

(Another deserved tribute to Ed Earl Repp is contained in this letter. Mr. Repp, as we have indicated before, is slowly but surely making a reputation in science fiction that will be an enviable one. We are pleased to get Mr. Paramour's comments.—*Editor*).

Favors Science Wonder Club

Editor, Science Wonder Stories:

Long live the "Wonder Stories!" Imagine my thrilling surprise, if you please, when I walked into a newsstand, hoping against hope that I might find behind the covers of some dry magazine at least one story to satisfy my craving for science fiction. So I went in expecting to come out empty handed, when I saw SCIENCE WONDER STORIES before I was half way across the room! I knew at once without questioning my process of reasoning, that I would find your name on the publication. I bought two copies without even looking inside. I knew what I would find, and I was not disappointed. I feel entitled to a place among your supporters and admiring readers. The pleasure that I received from merely seeing your new publication is only felt by those who have been inoculated with the virulent and infinitive stimulus of your magazines. I rove from place to place, hence have never been permanently settled long enough to subscribe, but I continually haunt the newsstands for your publications, and will always have some of your magazines along with me. I have a complete file of your former fiction magazines, and still have copies of the old copies of "Electrical Experimenter," with the original run of stories on the fizzy old "Baron."

Let me here add my endorsement to the suggestions of Mr. R. L. Middleton, as outlined in your first issue. Perhaps my only difference of opinion would be with regard to the publishing of "non-fiction" articles. I would like to see some articles, perhaps in line with the "Problems of Space Flying." In other words, these non-fiction articles should deal with the problems of the future in science, and should stimulate the imagination. I would not like to see articles in your fiction magazine on "how to build" and "experiments for amateurs," etc. These have their place in another of your publications. The *Science News* is all right. Any other non-fiction articles should be imaginative,

(Continued on page 574)

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The Reader Speaks

(Continued from page 573)

even speculative, but with enough sound science to give it the touch of reality. No hokus-pokus, no spiritism, please!

I notice that some have objected to the covers of your magazine, they say: "It's too loud!" The gentlemen who have made these suggestions may be right in saying that these loud colors affect them in some unpleasant way. As a matter of fact these gentlemen show a trait well known to psychologists. Most people are hypocritical on some lines. Most men will not wear a red tie, not because it is always bad taste or objectionable, but because they are fearful of what others might say about them. A person who wears red is said to almost invariably have a certain emotional streak in his nature—as if that were a bad fault. And most people cultivate an appearance supposed to be devoid of emotion. Now to my mind, nothing fires the imagination more than the colors of raging fire and shooting flame, or the cold deep blue of the ocean or space, or the mellow golden of the sun, and pale whiteness of the moon and stars. When arranged on your magazine cover to depict the planets and the stars, they give a feeling indescribable and only expressed in measure by some of the science poems that you have published.

IF you are a lover of science fiction, you must certainly obtain the November issue of AIR WONDER STORIES, now on all newsstands. This magazine specializes in science fiction in which aviation of the future is featured. You will find here your favorite authors in stories as stimulating and exciting as those in SCIENCE WONDER STORIES.

Contents of the November issue are:

"When Space Ripped Open"
by Ralph W. Wilkins
"Cities of the Air"
by Edmond Hamilton
"Beyond the Aurora"
by Ed Earl Repp
"The Crystal Ray"
by Raymond Gallun
"[illegible] Airplanes"
by E. D. Skinner
"The Second Shell"
by Jack Williamson

Why not have a "WONDER CLUB?" Official head of the organization at your office. Dues $1.00 a year, or something like that. Have a department of your magazine open to discussions upon various ideas, contributions being accepted only from members. Money received being used to defray expenses, and to offer prizes each month for the best story containing most original idea; and also for best non-fiction article suggesting new and original thoughts; and for benefit of all the prizes should not be awarded entirely on literary merit, but upon originality of thought.

J. H. O'Gann.

(Like an old friend, Mr. O'Gann wears well. We are glad to have him with us as one of the progressive minds that have, by their support, made Science Fiction the force that it is. The editor has under consideration many plans for an extension of the material offered in SCIENCE WONDER STORIES. Numerous suggestions have been received, which are having careful attention. For, as the editor said in his first words to his readers, "This is your magazine and we want to give you what you want." Regarding the covers, much has been said about them, pro and con. The editor's own belief is that every bit of material in the magazine should stimulate the mind. That goes for the cover too. Realizing the power of color, and in fact any visual portrayal, on the mind, the editor favors covers that have the effect of a stimulation or suggestion of ideas. If they do that he believes they serve their purpose. Very often a colorful combination will serve to portray very vividly an idea that a less colorful picture would not. And the reverse might be true.—*Editor*).

BOOK REVIEWS

PIONEERS OF PLANT STUDY, by Ellison Hawks. 285 pages, illustrated, stiff cloth covers, size 5¼x8½. Published by The Macmillan Co., New York; the Sheldon Press, London. Price $4.00.

The study of plant life, while confined to a narrow group of scientists, is still one which when it is interestingly presented makes a great popular appeal. The call of the field and the woods are deep within all of us, and there hardly lives a person who is not impressed by beautiful, rare and exotic plants.

In this volume Mr. Hawks attempts to trace the development of our knowledge of plant life by associating them with their discoverers. Feeling his way back to the earliest knowledge we have of plants he shows their true scientific association in the Bible, the early epics, such as the Odyssey of Homer, in historical writings of Herodotus and the expansive scientific theories of Aristotle. From then on he shows us, in a series of portraits, the pioneers in plant study and just what the contribution of each has been.

It is a volume whose appeal will be more for the student of plant life possessing already a good fundamental knowledge, or one interested in natural history seriously, than for the general reader. Its popular appeal will be more in the personalities in the evolution of our knowledge of plants, rather than in the plants themselves.

In the past one hundred years we have begun to learn the inner secrets of plants. From a few scientists our knowledge has really become systematized, and we have therefore been able to draw lessons and conclusions denied those who first fumbled about for an explanation of the overwhelming fertility of nature and the complexity of her products.

WAR! BEHIND THE SMOKE SCREEN, by William C. Allen. 192 pages, stiff cloth covers, size 4½x7½. Published by the John C. Winston Company, Philadelphia. Price $2.00.

This book is chiefly a compilation of speeches, articles and remarks of prominent men both before, during and after the Great War of 1914-1918. Mr. Allen attempts not only to expose the makers of wars but to point out the pitiful susceptibility of the masses of the people that makes them the tools of war-makers.

He discusses in turn various views on the origin of wars, the fearful propaganda spread to arouse hatreds between nations, the censorship used to keep that hatred alive (even to the extent of prohibiting anything in print that might show the enemy as possessing any kindly qualities).

He finds from his experience and that of men engaged prominently in the late war that the soldier must be scientifically worked up to the proper moral and mental state before he can become a killing animal. And this scientific inculcation of hate is the greatest indictment that Mr. Allen brings against the war makers.

The belief that "in times of peace prepare for war" and the only way to avoid war is to prepare for it, Mr. Allen attempts to smash. He quotes Major General Frederick B. Maurice, Director of Military Operations of the British General Staff who said: "As a soldier who spent a quarter of his life in the study of the science of arms, let me tell you that I went into the British Army believing that if you want peace you must prepare for war. I believe now that if you prepare thoroughly and efficiently for war you will get war."

One section that may strike forcefully on American readers is devoted to the admissions of prominent Englishmen on how they went to America with the sole purpose of getting us into the war. And when they returned with their mission a success many were knighted by the king for their invaluable service. Although one must maintain a calm perspective in reading of these things which can be told now, he must become alive to what can be done with his emotions when warmakers deem a new war to be a part of their schemes.

The book though interesting suffers from an excess of the copied thoughts of others. Though Mr. Allen means the book to be merely a dispassionate collection of such facts, his theme might have been strengthened by an elaboration of his own views.

A HISTORY OF MECHANICAL INVENTIONS, by Abbott Payson Usher. 385 pages, illustrated, stiff cloth covers, size 5¼x9. Published by McGraw Hill Book Co., New York. Price $4.00.

To all those who view with wonder our modern engines and machines, there should come a certain thrill from a perusal of the history of these inventions. The critical mind, making for explanations of wonders, finds that it must turn its attention to what we moderns call the dim past. Very few of our modern wonders are the results of sudden inspirations springing suddenly from nowhere. It is all too true that there is "nothing new under the sun." The history of mechanical progress is that of the application of new intelligences to old discoveries, the finding of new relationships in facts already known, and the adding to all of this of a smaller or greater amount of visionary or creative skill.

Professor Payson wisely shows us one of the reasons why we have done so much more in practical mechanics than, say, the Greeks, who certainly were as creative and as intelligent as we. He points out that the distinguishing feature between their scientific method and ours was the difference between theorizing and experimenting. "The experiments of early scientists," he says, "were incidental and casual. Not until the close of the middle ages were the mechanical sciences definitely placed on a foundation of verifiable experience derived from systematic and progressive experimentation."

So, where his Greek predecessors would argue until dawn on a question of science or even mechanics our modern scientist takes his problem to the laboratory and settles it once for all.

Although the book at times makes difficult reading, for the author insists on digging into what lies behind the surface of things, it is still extremely interesting. It abounds with sketches of inventions and "devices" from pre-Christian antiquity to almost our own day. One finishing a reading of it will certainly have gained a perspective of our modern industrial civilization that will give him a newer and broader understanding.

DOCTOR FOGG, By Norman Matson, 165 pages, stiff cloth covers, size 5 x 7½. Published by Macmillan Company, New York. Price, $2.00.

Doctor Fogg is a guileless but brilliant scientist who comes to a little fishing village on Herring Island, in order to carry on experiments by which he expects to re-establish radio communication with another planet called M'Lo. He has already had one message from the planet and then it signed off "forever." When his secret gets to the world, the little fishing village is overrun. It becomes a modern summer resort—a veritable Coney Island—a great real-estate boom ensues, and Dr. Fogg is known as the man who made the "Herring Island boom". The whole world is waiting on further communication with M'Lo, and it is hoped by the "powers" that commercial relations may be established. There is a mysterious woman, one Doris Yosemite, who claimed she had been transported by radio from M'Lo at the time the Doctor first established communication. The Doctor, finding himself an international figure, runs away with Doris to a little cottage where they can find peace. But, before he does this, he comes to the conclusion that perhaps M'Lo is our own earth, and that a great race had existed on it many eons ago. Then (we infer) it sent out radio waves which, because of the curvature of space, have returned to our earth again in the course of time.

The book is a subtle satire on the influence of scientific discoveries in a busy, vulgar, commercial world. Mr. Matson, with a touch as fine as that of James Branch Cabell, exposes the utter lack of interest of the general public in the importance of discoveries for which scientific men spend their lives. The masses are interested only in the immediate and prosaic effects of these discoveries. Science and scientists, according to Mr. Matson, are being played to a jazz tune, just as everything else is in the popular mind. In such a picture, Dr. Fogg appears as a lonely man with too much wisdom for this world.

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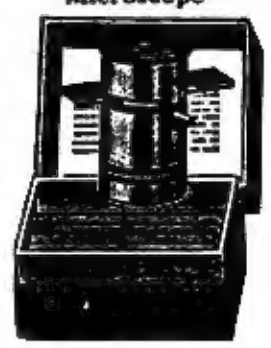

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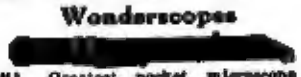

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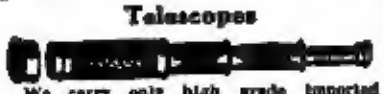

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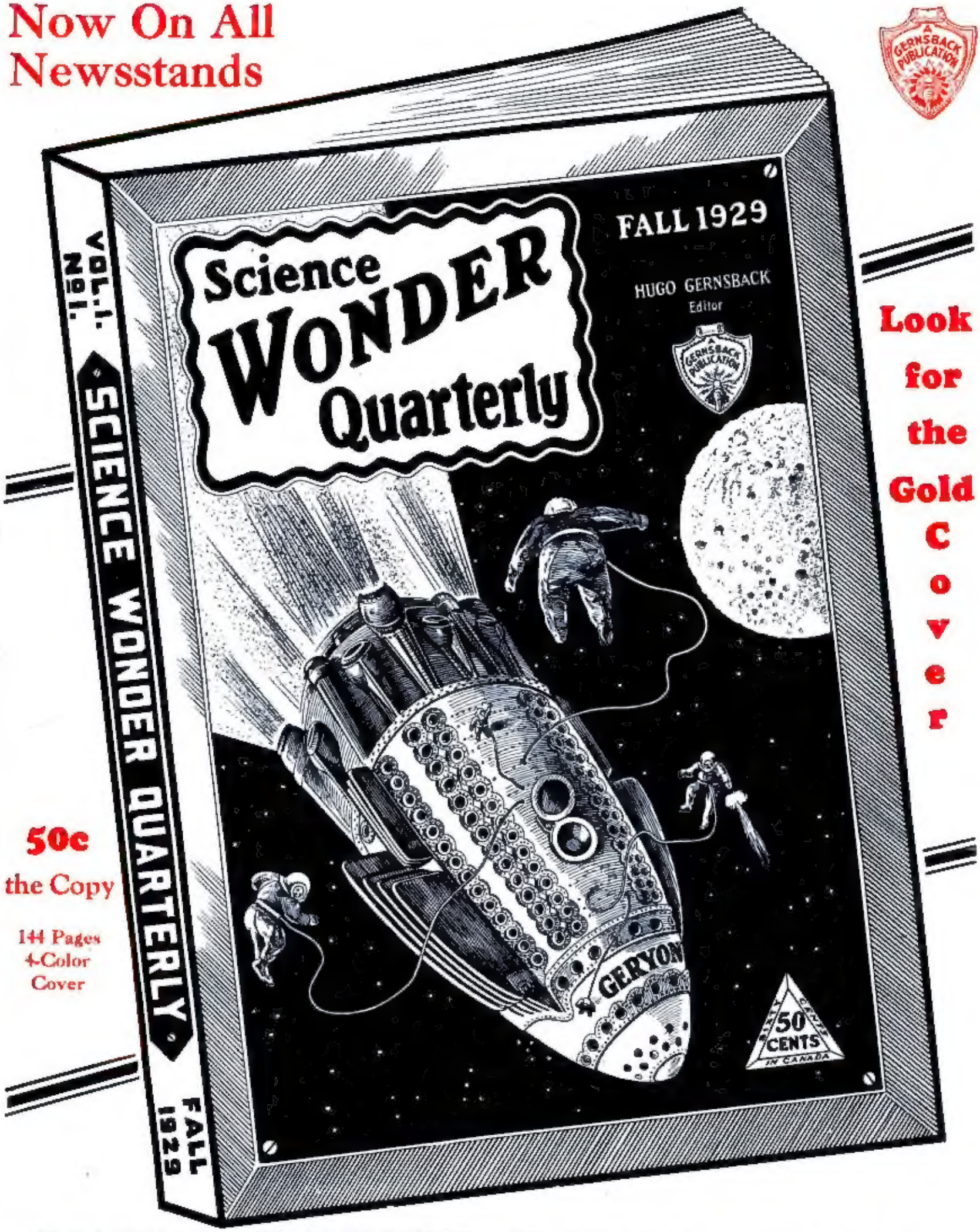

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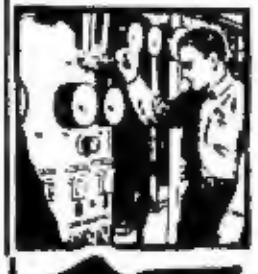

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